

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

Section number _____ Page _____

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 96001058

Date Listed: 1/23/97

Mare Island Historic District
(Boundary Increase)

Property Name

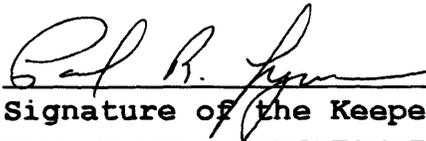
Solano
County

CA
State

N/A

Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.


Signature of the Keeper

1.23.97
Date of Action

Amended Items in Nomination:

Location:

Add "Mare Island" under Street location.
The correct county code is: 095 (Solano County)

Significance:

Add Industry as an area of significance.
[Industrial significance is discussed and justified in the narrative, but was not cited in the nomination cover form.]

Acreage:

The acreage of the boundary increase area alone is: 830 acres
The total acreage of the combined revised district is: 980 acres

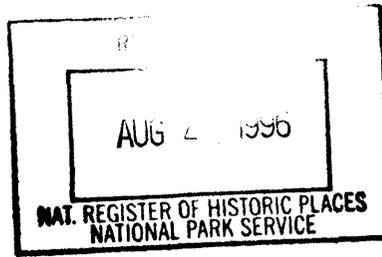
Cultural Affiliation:

Add American Military under cultural affiliation for criterion D.

DISTRIBUTION:

National Register property file
Nominating Authority (without nomination attachment)

United States Department of the Interior
National Park Service



National Register of Historic Places
Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Mare Island Historic District

other names/site number Mare Island Naval Shipyard

2. Location

street & number _____ not for publication

city or town Vallejo vicinity

state California code 06 county Solano code 045 zip code 94542

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property meets does not meet the National Register Criteria. I recommend that this property be considered significant nationally statewide locally. (See continuation sheet for additional comments.)
J. Paul Murphy 8/19/96
Signature of certifying official Date
Department of the Navy Federal Preservation Officer
State or Federal agency and bureau

In my opinion, the property meets does not meet the National Register criteria. (See continuation sheet for additional comments.)
See Enclosure (3)
for JHPD signed
concurrence
Signature of commenting or other official Date
State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:
 entered in the National Register
 See continuation sheet.
 determined eligible for the National Register
 See continuation sheet.
 determined not eligible for the National Register
 removed from the National Register
 other (explain): _____
Signature of the Keeper Paul R. Fyfe Date of Action 1/23/97

5. Classification

Ownership of Property (Check as many boxes as apply)	Category of Property (Check only one box)	Number of Resources within Property (Do not include previously listed resources in the count)	
		Contributing	Noncontributing
<input type="checkbox"/> private	<input type="checkbox"/> building(s)	482	156
<input type="checkbox"/> public-local	<input checked="" type="checkbox"/> district	13	---
<input type="checkbox"/> public-State	<input type="checkbox"/> site	20	3
<input checked="" type="checkbox"/> public-Federal	<input type="checkbox"/> structure	---	---
	<input type="checkbox"/> object	515	159
			Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)
N/A

Number of contributing resources previously listed in the National Register
52

6. Function or Use

Historic Functions
(Enter categories from instructions)

Defense: Naval Facility
Arms Storage

Health Care: Hospital

Funerary: Cemetery

Landscape: Park
Plaza

Religion: Religious Facility

Domestic: Institutional Housing

Current Functions
(Enter categories from instructions)

Defense: Naval Facility

Funerary: Cemetery

Landscape: Park
Plaza

Religion: Religious Facility

Domestic: Institutional Housing

7. Description

Architectural Classification
(Enter categories from instructions)

Greek Revival

Queen Anne

Colonial Revival

Moderne

Mission/Spanish Colonial Revival

Renaissance Revival

Materials
(Enter categories from instructions)

foundation brick, stone, concrete

walls wood, brick, stone, metal, stucco, concrete

roof wood, metal, asphalt, concrete, ceramic tile, synthetics

other

Narrative Description

(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

- Criteria A, B, C, D with checkboxes and descriptions.

Criteria Considerations

(Mark "X" in all the boxes that apply.)

Property is:

- Criteria A-G with checkboxes and descriptions.

Areas of Significance

(Enter categories from instructions)

- Military, Architecture, Engineering, Archeology: Historic -- Non-Aboriginal

Period of Significance

1854 - 1945

Significant Dates

1854 - Founding of shipyard; 1898 - Spanish- American War; 1917 - World War I; 1939 - Build-up to World War II

Significant Person

(Complete if Criterion B is marked above)

Cultural Affiliation

Architect/Builder

U.S. Navy, Bureau of Yards and Docks; various consulting architects and engineers

Narrative Statement of Significance

(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS)

- Documentation on file including preliminary determination, National Register listing, and Historic American Buildings Survey.

Primary Location of Additional Data

- State Historic Preservation Office, Other State agency, Federal agency, Local government, University, Other

Name of repository:

Mare Island NSY Historian's Office

10. Geographical Data

Acreage of Property 980 acres

UTM References

(Place additional UTM references on a continuation sheet)

1	<u>1 0</u>	<u>5 6 2 2 2 0</u>	<u>4 2 1 7 2 2 0</u>	2	<u>1 0</u>	<u>5 6 2 5 2 0</u>	<u>4 2 1 7 9 0 0</u>
	Zone	Easting	Northing		Zone	Easting	Northing
3	<u>1 0</u>	<u>5 6 4 0 0 0</u>	<u>4 2 1 8 3 8 0</u>	4	<u>1 0</u>	<u>5 6 3 7 6 0</u>	<u>4 2 1 7 9 4 0</u>
	Zone	Easting	Northing		Zone	Easting	Northing
5	<u>1 0</u>	<u>5 6 6 4 8 0</u>	<u>4 2 1 4 1 1 0</u>	6	<u>1 0</u>	<u>5 6 5 2 0 0</u>	<u>4 2 1 3 1 2 0</u>
	Zone	Easting	Northing		Zone	Easting	Northing

 See continuation sheet.

Verbal Boundary Description

(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification

(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Stephen D. Mikesell, Stephen R. Wee, David S. Byrd / Mary Maniery

organization JRP Historical Consulting Services / PAR Environmental Services date January 22, 1996

street & number 712 Fifth Street, Suite F / 1906 21st Street telephone (916) 757-2521

city or town Davis / Sacramento state CA zip code 95616 / 95814

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A USGS map (7.5 or 15 minute series) indicating the property's location.

A Sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black and white photographs of the property.

Additional items

(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name _____

street & number _____ telephone _____

city or town _____ state _____ zip code _____

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

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SECTION 7

1. SUMMARY DESCRIPTION

The Mare Island Historic District encompasses approximately 65 percent of Mare Island Naval Shipyard (MINSY), a ship building and repair facility operated by the U.S. Navy since 1854. The historic district includes an area of about 980 acres, of a total usable area of approximately 1500 acres at the shipyard. The boundaries for the historic district encompass the vast majority of buildings, structures, and sites that potentially contribute to the areas of significance (military history, industrial history, architecture and engineering, and historic archeology) and to the period of significance (1854-1945). Excluded from the boundaries of the district are those areas of the base that are dominated by post-1945 construction, an exclusion made necessary by the need to maintain an acceptable ratio of contributing to total buildings, structures, and sites.

The Mare Island Historic District includes a rich collection of buildings, structures, and sites that represent nearly a century of naval activities at this, the oldest shipyard and naval facility on the West Coast of the United States. The core of Mare Island has always been the shipyard, the *raison d'etre* of the facility, and it is within the shipyard that the most precious and impressive aspects of the district may be seen -- the oldest buildings on the base and some of the oldest shipyard buildings anywhere in the United States, as well as the huge shop buildings from the 20th century, some of which are larger than 300,000 sf. The naval base, however, has always been more than a shipyard, and the historic district is dotted with buildings, structures, and sites that reflect the presence of a naval community, as comparable to a municipality as to a military base. Included therein are properties associated with a wide range of military missions, including a large ammunition depot, a major naval hospital, a Marine barracks and, during the 20th century, a submarine base. Also reflective of the diverse military missions are dozens of buildings and structures that supported the base as a whole or individual missions: warehouses, public works facilities, and so forth. Included as well are the accoutrements of a community of full-time residents. These include pockets of residences, ranging from mansions for ranking officers to bungalows for junior grade officers and cottages for civilian employees. These include as well recreational and support facilities for enlisted personnel, officers, and civilians. Finally, the historic district includes dozens of small, ancillary buildings that, while individually unimpressive, add to the diversity and richness of the sense of time and place within the district. The smaller buildings date from the 19th as well as the 20th century and include such functions as garages, power substations, small ammunition magazines, and, from the World War II era, bomb shelters and first aid stations.

In addition to a wide range of buildings and structures, the historic district includes historic archeological features that document the earliest American military occupation of the island, the industrial technology associated with shipyard activities, and cultural geography and layout.

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Finally, the historic district includes several impressive landscape architectural features -- parks, allees, and so forth. Landscape architecture is a less important element at Mare Island than in some historic military facilities because it was from the outset an industrial facility, dominated by shipworks that allowed for little landscaping. In some areas of the base, however, very old plantings and landscape schemes may be seen and appreciated.

The dominant characteristic of the historic district is its diversity. This relates to the long period of significance -- 91 years from the era of wooden sailing ships to the eve of the nuclear era, from the early American occupation of California through World War II. It reflects as well the presence of discrete functional units at the base. It also relates to the presence of hundreds, sometimes thousands of permanent residents at the base and the need for community-based facilities in addition to mission-related facilities. This functional diversity is expressed in a wide range of building and structural types, including a variety of structural systems and architectural styles. There is not a simple thematic unity to the properties at Mare Island as would be the case with a base that was built as a single unit at a single time. Because the district is so varied, the resources included therein can only be appreciated in the context in which they were built. That context is defined by two variables: the function with which a resource is associated (the hospital, for example, or the ammunition depot), and the period in which the resource was built. For this reason, this nomination describes and discusses significance in terms of five historical periods and seven areas of the base, which correspond to discrete missions for the base.

The historic district includes **661** buildings and structures, **502** of which are contributing elements. It also includes **12** historic landscape areas, all of which contribute to the historic significance of the district. Finally, it includes **one** historical archeological site, comprised of a minimum of **27** discrete features, all of which contribute to the significance of the district.

2. PREVIOUS STUDIES

Since the mid-1970s, numerous cultural resource surveys have been conducted at Mare Island, all designed to identify properties eligible for listing in the National Register of Historic Places. Each survey had a slightly different orientation.

In 1974, George R. Adams, then Managing Editor for the American Association for State and Local History, prepared a survey of historic sites on Mare Island. This survey resulted in the designation of Mare Island as a National Historic Landmark (under the title, "Mare Island Naval Shipyard") with fifty-two buildings and sites identified within the NHL documentation. The NHL consists of four discrete historic districts, or areas, with tightly drawn boundaries that included essentially only the oldest and most significant buildings and sites on Mare Island. Area A contains most of the original shipyard and residential areas on Mare Island. Included in this

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district were Buildings 51, 53, and 55 (originally the Structural Shop, Pattern Shop, and Sail Loft). All three of these buildings were demolished prior to 1985. Area B comprised the original Ammunition Depot and cemetery. The boundary line for Area C was drawn to include only the Hospital, Building 88, and Building M-1.

The four Marine Officers' Quarters (M-2 through M-5) made up Area D. Insofar as the historic resources were concerned, the National Historic Landmark nomination had only two categories: Landmark buildings and major non-contributing buildings or structures within each district.

In 1985-86, Kenneth Cardwell prepared the *Historical Survey of Mare Island Naval Complex* for the Mare Island Naval Shipyard Facilities Planning Branch. Cardwell's survey expanded the Historic Landmark boundaries into five Historic Districts designated as the Shipyard Historic District, the Residential Historic District, the Naval Ammunition Depot Historic District, the Hospital Reservation Historic District, and the Marine Barracks Historic District. The five districts are generally not contiguous, being separated by post-1936 construction, chiefly by buildings and structures built during World War II. The study focused on buildings built more than 50 years from the time of the study, i.e. before 1936 but did not result in a comprehensive inventory of pre-1936 buildings. The survey determined 58 additional buildings eligible under the National Landmark status as contributing to the Landmark district. Cardwell concluded that another 35 buildings, while not contributors to the National Historic Landmark district or themes, were individually eligible for the National Register of Historic Places. This survey was submitted to the California State Historic Preservation Officer and subsequently to the Keeper of the National Register. For various reasons, the Cardwell Study was never approved by the Keeper and did not result in a formal listing on the National Register.

In addition to the studies of the built environment, minimal archeological work has also occurred at MINSY. In 1986, William Roop and Katherine Flynn of Archaeological Resource Service prepared the *Mare Island Archaeological Resources Inventory* for the Western Division of the Naval Facilities Engineering Command. The study focused solely on identifying archeological resources through a pedestrian survey of the island. Roop and Flynn identified nine prehistoric locations and 55 historic locations developed before 1933. Their report recommended these sensitive areas be further studied through test excavations. They did not prepare nominations for these locations for consideration in the National Register of Historic Places.

In 1994, PAR Environmental Services, Inc. prepared the *Cultural Resources Monitoring and Site Evaluation for the Saltwater Fire Suppression System, Mare Island Naval Shipyard, Vallejo, Solano County, California* for the Western Division of the Naval Facilities Engineering Command. The project was initiated after trenching for a new fire suppression system uncovered archeological resources. PAR recorded six archeological features during construction monitoring and evaluated these features using National Register criteria for eligibility. The historic-era narrow-gauge railway and a redwood drain were found to lack sufficient integrity or significance to

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qualify for the National Register in consultation with the State Historic Preservation Officer (SHPO). A sandstone seawall in the Naval Ammunition Depot (NAD) and brick retaining wall around the magazines were determined to possess sufficient integrity and significance to qualify for the National Register in consultation with the SHPO. Additional information was needed to adequately assess remnants of a Civil War defense system.

The current nomination treats the historic district boundaries in a different fashion from previous studies and includes a substantially greater list of contributors and non-contributors. The principal difference between this nomination and earlier efforts is the fact that this historic district includes properties associated with the role of Mare Island during World War II, arguably the most important period in its history, at least within the context of military history. The addition of World War II properties expands greatly the geographic extent of the district, essentially filling in the blanks between the smaller districts identified by the NHL and by Cardwell. The present district also includes far more properties -- contributing as well as non-contributing -- an increase attributable chiefly to the inclusion of World War II-era properties, which account for over half the total. This historic district includes as contributors a large number of small buildings, such as garages and utility buildings, that were overlooked in the Cardwell survey, even though most were built prior to 1936. These smaller buildings and structures, while not individually distinctive, contribute to the sense of time and place of the historic district and are judged to be contributing elements, except where they have lost integrity. Finally, this historic district includes historic archeological properties that are associated with use of Mare Island by the U.S. Navy.

The primary intent of this revised documentation is to establish and justify a single historic district at Mare Island. The rationale for this boundary change is explained in detail in "Boundary Justification." The purpose of this documentation is also to establish and justify a comprehensive list of all properties within that district and identify those that do and do not contribute to the historic district.

3. METHODS

JRP Historical Consulting Services (JRP) and PAR Environmental Services (PAR), in a subcontracting arrangement with Tetra Tech, Inc. and Engineering Field Activity, West (EFA), conducted a survey of the historic and historic archeological resources at Mare Island. The purpose of the survey was to reevaluate the property and to determine a National Register Historic District in light of the potential eligibility of World War II structures and sites not included in previous studies and to include consideration of historic archeological properties.

Buildings and Structures

An initial survey of the buildings and structures on the installation was carried out by personnel in the MINSY environmental department. In an effort to efficiently manage the survey of the sizable number of resources, MINSY personnel divided the installation into 27 separate analysis areas. These analysis areas included the five

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historic districts studied by Cardwell, 15 areas that have a concentration of World War II-era buildings and structures, and seven areas with resources predominantly from the post-1945 era. A team comprised of planners, design engineers, and other shop personnel then prepared State of California Historic Resource Inventory Forms (HRI) for the majority of buildings and structures on the island. JRP was hired to provide technical services in completion of the work begun by MINSY staff, to ensure the properties had been correctly identified, to develop a historic context for evaluating the properties, to devise a defensible historic district boundary, and to prepare this nomination.

As an initial task, JRP, along with PAR, prepared a lengthy historic context for properties at Mare Island. The context examined properties in three areas: theme, defined as the changing mission of the base; time, defined by discrete periods in the long history of the base; and place, defined by geographical areas of the base that correspond with the use of the facility by different functional units. The context categorized property types associated with each era and function at Mare Island and served as the essential evaluation framework for defining the boundaries of the historic district and its contributing elements.

Using the forms generated by MINSY, JRP personnel visually inspected each building included in the 27 survey analysis areas. The purpose of this fieldwork was twofold: to ensure accuracy of the information on the HRI forms and to assess the buildings and structures as to whether they are "contributing" or "non-contributing" elements of the National Register historic district.

The result of this survey and the re-evaluation of previous inventories has been the inclusion of numerous 1930s and 1940s buildings and structures as contributing resources. Evaluation has primarily been conducted on the exterior of the buildings; interior integrity and significance has not been assessed in this study and is only occasionally mentioned. This does not mean, however, that the interiors of the buildings in the Mare Island Historic District are insignificant, only that they have not been inspected and evaluated as part of this study.

Landscape Features

The inventory and evaluation of formal landscape elements was produced jointly by JRP and CoDesign, a Davis, California-based landscape architectural firm with extensive experience in evaluation of historic formal landscapes. Potentially significant landscapes were identified by JRP on the basis of historic maps and other research methods. These were inspected by CoDesign, which was involved in evaluating their historic significance.

Archeological Features

PAR's 1994 work for the fire suppression system installation in the Naval Ammunition Depot (NAD) area proved that intact subsurface features associated with the military occupation of Mare Island do exist. While construction and development has resulted in numerous (and sometimes substantial) alterations to the original landform, some

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areas have been covered with fill, effectively burying intact or fragmented remnants of Mare Island's past. The uncovering of the original NAD seawall 60 feet inland and under several feet of fill is a case in point.

Recent work at the San Francisco Presidio resulted in a predictive sites model for that installation, based on a careful assessment of primary historical records compared to land disturbance activities. Given limited funds to conduct archeological excavations, absence (or near absence) of surface indications of archeological features due land changes through time, and abundance of historical records, the National Park Service chose to prepare a sensitivity model as a means of identifying predicted archeological features that could be considered contributing elements to the National Historic Landmark [NPS Presidio of San Francisco National Historic Landmark District Nomination 1992]. This approach is also suitable to Mare Island, with its long history of military occupation, proliferation of primary maps and manuscripts, and alterations to the land that have obliterated surface indications of many potential features.

Following precedent set by the National Park Services' approach to the San Francisco Presidio, Mare Island Naval Shipyard is viewed as a single historical archeology site containing numerous features. The contributing archeological features are functional components of a single, long-term military occupation and are therefore elements of a whole (or features of one site). Predicted features range from foundation remains to discrete refuse disposal areas. These deposits are related to domestic use, industrial activities, defense, and architectural features and are found in all of the functional subareas identified on base.

Specific features were mapped based on physical evidence (if any) and historical records. Known sites, such as the NAD seawall and others observed by Roop and Flynn and PAR, were plotted as features on the predicted maps. A careful study of MINSY primary maps dated between 1852 and 1945, and primary records (ship logs, letters) was conducted and data were used to identify areas of potential subsurface deposits or features that could contribute to a greater understanding of the island's early historical development and military occupation. Features that contain archeological potential were mapped to allow a margin of error in plotting from historical maps to modern maps, and to include backlots and other areas that could contain associated subsurface deposits (e.g., outhouse pit near residential housing).

While most potential areas were plotted on maps, exact locations could not be pinpointed for a few features. For example, in times of military buildup tents were often set up to accommodate overflow. Tent "cities" were noted associated with both the hospital and the Marine Corps in the 19th century; their locations are uncertain. Refugees from the 1906 San Francisco earthquake were also housed in tents at Mare Island for a time, but the location of the refugee camp is uncertain.

Once potential areas were plotted, a comparison of the projected feature locations with known land disturbance activities, such as filling of marshy areas or grading of Dublin Hill, was made. Many of the features were then eliminated from the map, as they were most likely obliterated through cut and fill work. For example, archeological features once located on Dublin Hill would have been destroyed when the hills were leveled and

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the soil placed elsewhere on the island during filling activities. All potential feature locations were examined on the ground by historical archaeologists to determine possible surface manifestations (e.g., undulations in the terrain, artifacts, foundation remains) and visible disturbances.

Only features that contribute to the overall significance of the archeological site were plotted. The value of a feature varies based on the availability of historical records, knowledge regarding a specific period in time, and the data potential contained in deposits that could address ongoing research questions and domains. Generally, archeological features have the potential to provide important information regarding MINSY's social, economic, and physical history. Data retrieved from intact features may also be useful in addressing ongoing research topics in military history, frontier adaptation, self-sufficiency, and trade, especially during the early formative years of the base when supply and demand in California was erratic due to lack of transportation and the gold rush, and industrial technology.

The contributions of archeology to the history of MINSY are greatest for the early periods of use when records are often sketchy and disposal patterns are most beneficial to archeological data collection. After World War I the historic record can often be reconstructed through a combination of archival research, oral interviews, and records, and the contributions of archeology to understanding this period of military history, technology, and social development lessens considerably. In addition, refuse disposal and sanitation practices underwent major changes after 1898, decreasing the likelihood of discrete subsurface deposits associated with a particular house or activity. Given these limitations in the value of the archeological record, identified potential features primarily date prior to 1900.

4. COUNTING RESOURCES

The Mare Island Historic District includes about 980 acres of land that has been occupied and used nearly a century and a half. Because of this long history of use, the district includes thousands of elements, great and small, that in some manner reflect the history of the area. The following comments define forthrightly the methods that were employed to count resources, both contributing and not, as well as the occasions in which a resource was not counted in either category.

Buildings

With rare exceptions, the rule used in counting "buildings" was the presence of a "facility number," assigned the building by the civil engineering staff of Mare Island Naval Shipyard. The general rule was: if the item was assigned a facility number, it was treated as a building.

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There are three exceptions to this rule. First, temporary buildings were not counted, either as contributing or non-contributing. These buildings can be and commonly are moved around the base and off-base. The modern definition of "temporary" bears no resemblance to the usage during World War II. At that time, temporary buildings were those built of wood, designed to last the duration of the war. Most of these would be called permanent in modern usage. The modern usage of the term, "temporary," is nearly synonymous with "mobile," referring to buildings that can be moved easily from one site to another. These include trailer-type office buildings and a group of movable prefabricated arched metal sheds, called "wonder arches."

Second, the civil engineering section sometimes assigns facility numbers to landscape elements, such as parks, tennis courts, or baseball fields. These were counted as "sites" when contributing to the historic district; if non-contributing, they were not counted at all. Third, un-enclosed machinery was not counted, either as contributing or non-contributing, even though this machinery was typically treated as a permanent (i.e. non-temporary) facility. This machinery almost always comprised pumps, whether used for sewage, flood control, or other purposes.

Sites

Landscape elements were counted as sites only when they were also identified as contributing elements. Otherwise, landscape elements were not counted at all.

Given the long military occupation of Mare Island and the continuous function as a shipyard, this study considers the island as one large contributing archeological site. The archeological site includes 28 contributing features. Some of these, such as the Civil War earthworks and seawall, are known to exist; others are predicted based on land configuration and disposal patterns. Several of these archeological features could also be considered structures. For example, the brick retaining wall that extends around the original NAD area is a structure but is counted as an archeological feature on the sensitivity map, and thus is part of the single historical archeological site.

Figure 4 identifies probable locations of potential archeological features. Feature numbers (e.g. F2) correspond to both the text and **Figure 4**. The majority of numbered areas are related to a single feature (such as the NAD seawall). In some cases one feature number was assigned to a functional area that contained a grouping of similar features. For example, the entire residential military housing area was assigned one feature number, even though each residence had a backyard with numerous outbuildings (barns, privies, sheds, gardens). Multiple subsurface deposits, all capable of contributing to the significance of the site, may be found in this one feature area. The same approach was taken in the area that once contained Marine Corps officers' housing. Features without near-exact locations (such as tent camps) and those that are likely to have been obliterated or greatly disturbed through cutting and soil disturbance were not plotted.

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Public works features, such as redwood box drains, abandoned ceramic pipe, cobblestone paving, brick walkways or retaining walls, are known to exist at MINSY and have been identified during past archeological studies. These features occur ubiquitously on base and were not plotted as features. They do, however, contribute to understanding the cultural landscape and military design layout of the base.

Structures

Very few resources were identified as structures. The only properties so identified were: drydocks, piers, water tanks, and the railroad network. The railroad network within the historic district is counted as a single (non-contributing) structure.

In the discussion below, properties are discussed according to the two major elements of the historic context for these properties: period of construction (time), and part of the base (space). It will be observed that not all buildings and structures are described. Generally, small buildings, such as garages, power substations, and guard houses, are not described. Very repetitive types, such as bomb shelters and ammunition magazines, are described only once, with reference to all examples of the type. Where possible, similar but not identical buildings are also described in groups, rather than individually. The total lists of contributing and non-contributing buildings are presented in items 11 and 12 below.

5. GENERAL DESCRIPTION OF THE SETTING AND PROPERTY TYPES WITHIN THE HISTORIC DISTRICT

The Mare Island Historic District, as noted, comprises about 65 percent of the usable land at the Mare Island Naval Shipyard. Much of the district is built on a natural island at the edge of San Pablo Bay, near Vallejo. San Pablo Bay extends northward from San Francisco, surrounded in most cases by Contra Costa County on the east and Marin County on the north, although Sonoma and Solano counties also front on the northern end of the bay. Mare Island is at the northeastern extreme of the bay, legally part of Solano County. It is surrounded on the west by San Pablo Bay, on the east by the Napa River, which is called the Mare Island Strait at Mare Island, and on the south by the Carquinez Strait, which connects San Pablo Bay with Suisun Bay. On the north, the island blends imperceptibly into the marshlands that extend along the northern edge of San Pablo Bay. The location of the island with relation to Vallejo and San Pablo Bay is shown on the attached U.S.G.S. quadrangles, identified as **Figure 1**.

As discussed in the historical overview sections in Section 8, Mare Island today is approximately 50 percent man-made, comprising fill lands as well as flat lands creating by leveling natural hills (the cut being used to create fill lands). Generally speaking, the southern end of the island represents the least-disturbed natural setting, the center of the island retains some natural features, and the northern island is almost entirely man-made.

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In the following discussion, the Mare Island Historic District is described as comprising seven areas: the Shipyard North; Shipyard South; Naval Ammunition Depot; Hospital; Residential-Administrative Area; Marine Corps Area; and the North End. These represent distinct geographic areas as well as functional areas. The seven areas are shown in **Figure 2**, entitled *Areas of Mare Island*. Virtually all of the first six areas are within the boundaries of this historic district; most of the North End has been excluded from the district. The location of contributing and non-contributing buildings are shown in **Figure 3**, entitled *Historic District Map with Contributing Buildings by Historic Era*. Contributing archeological features are depicted in **Figure 4**, *Potential Historical Archeological Features*. Contributing structures and historic landscapes are shown in **Figure 5**, *Historic District Map of Landscapes and Structures by Historic Era*. **Figure 6** is a detail of the Sanger Plan, the original plan for the naval installation at Mare Island.

Mare Island today is a blend of buildings from many eras of construction, many different historical functions, architectural styles, and so forth. The current conditions there may be inferred from the following discussions, which describe how the island evolved over time. Briefly stated, the island today is the product of more than 100 years of construction. The landscape itself has changed as a result of this construction, with natural hills having been removed to ease construction, the bay lands filled to provide additional usable space, the strait outside the island deepened to allow entry of larger ships, and the island laced with roads, railroads and other utilities. The degree of natural modification, the age of buildings, the functional orientation of buildings and structures, and architectural styles differ greatly from one area to the next.

The southern end of the island, herein described as the *Naval Ammunition Depot* is the least densely occupied and retains the greatest degree of natural integrity, a fact attributable to its usage over time for the storage of munitions. The bulk of the *Naval Ammunition Depot* is characterized by open spaces, dotted with magazines. Only on the eastern waterfront is this area intensively developed with buildings. Buildings date from the 1850s through the end of World War II, although the majority of these date to the time of the two world wars. Ancillary uses, including a golf course and reservoirs, are found in this area as well.

The *Hospital* area is the smallest of the six, located near the center of the island from east to west, just north of the *Naval Ammunition Depot*. The *Hospital* area is intensively occupied with large buildings, most pre-dating World War II. The *Hospital* is nestled into a hillside and is arguably the most picturesque area of the base, dominated as it is by handsome architectural specimens and surrounded by pleasant natural surroundings and lush landscaping.

The *Marine Corps Area* extends to the west of the *Hospital*, at the crest of the hillside that separate the east and west sides of the island, as well as to large areas on the east and west sides of the crest. The *Marine Corps Area*, both inside and outside the boundaries of this historic district, is the least cohesive of all areas of the island in terms of the function, date of construction, architectural style, and other elements of the built environment. The core of the area is the Marine Corps compound, which includes a barracks from 1917 and much older officers' quarters, moved here from elsewhere on the island, as well as ancillary buildings associated with use by the

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Marines, including the Naval prison. The bulk of the area, however, is dominated by post-1945 residences, most of which are duplexes built in the 1950s and townhouses dating to the 1960s. The modern residential areas (comprising more than half the *Marine Corps Area*) have been excluded from this historic district.

The *Shipyards South* is located along the flats on the east side of the island, east of the *Hospital* and the *Marine Corps Area*. The *Shipyards South* is the most exclusively industrial area of the island, dominated by huge industrial buildings, most of which were built between 1920 and 1945. Open spaces exist in and around these massive buildings but essentially all open spaces are either paved or occupied by railroad tracks. The *Shipyards South* is bounded on the east by the Finger Piers and World War II-era drydocks.

The *Shipyards North* is, of course, north of *Shipyards South* and east of the *Residential-Administrative Area*, described below. Like the *Shipyards South*, the *Shipyards North* is flat, intensively occupied by industrial buildings, and almost devoid of landscaping; any open spaces that exist are paved. Unlike the *Shipyards South*, however, the *Shipyards North* is dominated by relatively small industrial buildings, many of which are very old and remarkably handsome from the design standpoint. Taking into account architectural merit and historical merit, the *Shipyards North* is the heart of historical Mare Island; it includes the oldest, most handsome, and historically significant buildings on the island. It is bounded on the east by drydocks and a long quay wall.

The *Residential-Administrative Area* is the second-smallest of the six areas. It is bounded by the *Shipyards North* to the east, the *Shipyards South* to the south, the *Marine Corps Area* to the west, and the *North End* to the north. This area retains the lowest degree of natural integrity. Historically, it was built around Dublin Hill, a substantial hill near the center of the natural island. While the hill existed, this area was used almost exclusively for residential purposes, including a broad mix of military and civilian housing. Dublin Hill was removed incrementally during the early 20th century, allowing for construction of large administrative buildings. This area competes with the *Shipyards North* when measured using the twin criteria of architectural merit and historical significance.

The *North End* retains the least integrity of all areas, when considering the natural landscape and historic buildings and structures. The area is entirely on fill, with the reclamation occurring chiefly during the 1920s and 1930s. The *North End* was partially built out during the 1930s but was not used intensively until World War II. The bulk of World War II-era buildings have since been demolished. These buildings have been replaced in part with new construction, although many areas of the *North End* have lay vacant since the World War II buildings were removed. What exists today in the *North End* are some remnant World War II buildings, many newer structures, and vast expanses of open space, much of it paved. Most of the *North End* has been excluded from this historic district, owing to the dominance of post-1945 buildings and the general lack of integrity to the pre-1946 historic scene.

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6. BUILDINGS, SITES, STRUCTURES FROM THE PERIOD, 1854-1865

Buildings and Structures

Shipyard North

Building 45. Designed by Calvin Brown in 1864, during the first of his two assignments as Civil Engineer for Mare Island, this two-story rectangular brick storehouse was later redesignated the apprentice training building. The eastern half of the building was removed in 1915 to make room for cranes and shipways. At the same time the gabled roof was altered to its current flat style. As is the case with many of the oldest buildings on Mare Island, the function and appearance of Building 45 have changed with the mission of the base, although the structural core of the building remains.

Building 46. This building has the distinction of being the oldest standing building on Mare Island. Built in 1856 as a smithery, Building 46 is brick structure on a stone foundation. Construction of Building 46 was accomplished under the direction of Daniel Turner, the first civil engineer at Mare Island Navy Yard. This building has been altered as changes in technology have mandated changes in function and fixtures. Repairs following the 1898 earthquake also brought changes to the smithery's appearance. These combined with roof replacement have resulted in the removal of the building's original ventilator cupolas and chimneys. Despite these modifications, Building 46 remains a key fixture in the historic environment at Mare Island.

Building 69. This building, along with Building 71, is located in an area designated for storehouses by the Sanger Plan, the original master plan for Mare Island Navy Yard. Initially constructed in 1865 as storage for equipment and recruitment supplies, Building 69 experienced two subsequent expansions. In the early 20th century two separate additions, each to the north end of the building, brought the storehouse to its present size. Building 69 is a two-story brick structure whose exterior appearance evidences the work of more than a single designer.

Building 71. Another Turner accomplishment, Building 71 was built in 1858 as a storehouse. Its western wall sat against the toe of the slope of Dublin Hill. As with many of its contemporaries, Building 71 was a long rectangular two-story brick masonry building. A third story was added in 1937 and 1938. The original gable roof was replaced at the same time with a reinforced concrete shallow gable roof. Window and entryway modifications are also apparent. This is the last of the Turner storehouses to be constructed under the command of David G. Farragut, first commander of Mare Island. Although modified from its pre-Civil War appearance, the building is a contributor on the basis of substantial material from the earliest period at Mare Island, and as a symbol of the long tradition of adaptive re-use of the very old industrial buildings at the facility.

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Building 85. In 1858, the stone foundation was laid and construction began on this Turner-designed foundry. Necessary appropriations for its completion, however, were delayed until after the Civil War. Civil Engineer Calvin Brown, who left his mark on several Naval shipyards, oversaw the completion. As with the other buildings of its age on Mare Island, the former foundry has been altered to accommodate new missions and changes in building standards and to repair damage resulting from the 1898 earthquake. The many alterations are evidenced by the "patchwork" appearance of the brick exterior walls.

Building 87. Remembered by many as an early Machine Shop, Building 87 evidences the many alterations that have occurred as the building's function changed. Built in 1858 as a two-story rectangular brick structure, the now one-story structure was once the heart of Mare Island's Ship Repair Facility. In fact, it forms the base of a U-shaped mechanical structure made up of itself and Buildings 85, 89, and 91. Here the repairs were made to the boilers and machinery of that generation of ships that led the transition from sail to steam.

Building 89/91. Another portion of the steam engineering complex, Building 89/91 is a rectangular brick building with a seamed metal roof. Although records indicate the building was not completed until 1871, its foundation dates from the earliest construction period. The north wall evidences heavy reconstruction, repair, and/or addition. The building features a handsome cornice. The brick walls terminate in a plain brick frieze and cornice with dentils. The cornices returns are of carved sandstone.

Shipyard South

Building 88. Built in 1862, Building 88 is an isolated remnant in this area from Mare Island's earliest period. Constructed as a stables, it was used in that function until 1929. It has since been used for storage. In its antiquated function and isolation, the building illustrates the isolation of the Shipyard South area during the 19th century. Architecturally -- structurally and stylistically -- the building is of a piece with the oldest shipyard buildings as well as those in the Naval Ammunition Depot.

Naval Ammunition Depot

Building A1. Building A1 represents the first of the many magazine buildings at Mare Island. Mare Island's first Commandant, David G. Farragut, personally selected the site with due consideration for the safety aspects of ordnance handling, and Daniel Turner oversaw its construction, apparently by the same stone masons who built the nearby Benicia Arsenal. This building's 1857 completion date makes it the oldest Naval magazine facility on the West Coast. Much of the original building was destroyed by an explosion in 1901, and some of the explosion damage is still visible in the rebuilt version. The central doorways of this sandstone storage facility feature a wreathed eagle astride an anchor.

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Buildings A3 and A4. On the heels of the completion of Building A1, two brick shell houses were built nearby and completed in 1859. Both are rectangular with parapeted gables. The two offer further evidence of the perceived need for a military buildup on the West Coast in the years immediately before the Civil War.

Building A45. The oldest residence still standing on Mare Island, Building A45 sits upon a bluff overlooking the ordnance facility. Completed in 1860, for years it served as the residence for the installation's Chief Gunner. It is a vernacular, frame structure of some 2400 square feet. It is sided in v-groove horizontal boards and includes some very old 2/2 double-hung wooden sash. A detached garage, Building A45A, is a later addition.

Landscape Elements

Cemetery (Facility A0). Included within the Naval Ammunition Depot is the Mare Island Cemetery which was established in 1858. The first remains interred were those of a quartermaster from USS *Massachusetts*. The remains of others from around the world have since been added including Anna Key Turner, daughter of Francis Scott Key and wife of Daniel Turner, and Reverend McAlister, founder of St. Peter's Chapel. The cemetery has undergone several expansions to accommodate its 996 graves. Its northern limits were increased in 1893 and 1910. In 1920, it was expanded 50 feet to the south. Not long afterward the cemetery was closed to general interment. The Mare Island cemetery contains many significant landscape features including an old white picket wood fence, wrought iron gates, old brick and plaster retaining walls and several species of Australian natives including eucalyptus, and acacia trees. The plants include California pepper trees, Monterey pines, large upright junipers, and roses planted along the road.

Landscape around Residences within the Naval Ammunition Depot. The residential area of the Naval Ammunition Depot includes mature plantings and structural landscape elements from the various eras with the period of significance. Old landscape associated with these homes are characterized by large deodar cedars, large upright junipers, parney cotoneaster, Monterey pine, pepper trees, pittosporum, several varieties of palms, bougainvillea vine, bush hawthorn, black walnut, camellias, roses, live oaks, lilac, geranium, and coast redwoods. Walks are of some interest as they are constructed of mostly individual 2 feet x 4 feet concrete slabs that may have been fabricated off site. These large "pavers" are also present at the north edge of Alden Park. Old retaining walls may be seen on the east slope. Other notable features in the area include lights made from old shell casings, as well as plantings of pepper trees, a Carolina jasmine hedge, and apple trees. These landscapes developed over many years and very few if any date to the earliest period of history at the base.

Archeological Features

Predicted archeological features from the earliest period of Mare Island's military occupation are expected in several subareas on base. Features include the remains of defense fortifications, industrial activities, shops, residential quarters and associated dumps, cisterns, and latrines. These are described below by subarea.

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Shipyard North

F1: Industrial Area. This feature encompasses Mare Island's original steam engineering complex, including the foundry, machine shop, boiler, coal sheds, cisterns, and associated industrial refuse and latrines. Immediately behind the foundry lay the yard's first stables (1854-1862), presently under Buildings 98 and 107 and the ordnance storage area and gunpark.

Access to potable water was and continued to be a problem from the outset for the navy yard. Mare Island had no flowing streams. Wells were dug in an effort to use the ground water, but the water was found to be brackish and unusable by the end of each day. For the first few decades of naval habitation, all potable water came by way of water boat from nearby Port Costa. The water was stored in underground brick cisterns located around the island. Cisterns were located between buildings 69 and 71, behind the foundry, and at other locations with the Shipyard area. These cisterns were gradually abandoned as more efficient water collection and storage facilities were built, but remained visible on the island into the twentieth century.

F2: First Independence Berth. The USS *Independence* arrived at Mare Island around 1857 and was permanently berthed next to the quay wall by the coal sheds. This ship carried medics operating the yard dispensary, prisoners, and Marines.

F3: Marine Railway. In 1986 construction uncovered granite blocks associated with the 1856 marine railway and wet basin originally located in the vicinity of Drydock 2 and Building 125. These blocks, or "rails" were about three feet thick by four feet wide and varied in length from three to twelve feet. The granite rails rested on redwood pilings, also identified during construction.

F4: Sawmill Site. Built in 1861, this brick building had a cellar, was two stories high and measured 150 feet by 55 feet. A brick wing, measuring 55 feet by 55 feet and one story high, extended from the side of the sawmill. The mill provided wood for the joiners and boatbuilders located nearby. The mill was destroyed in the 1898 earthquake. The site of the mill is underneath Buildings 106 and 113.

Shipyard South

The eastern portion of the marine railway and the wet basin were located in Shipyard South at Drydock 2.

F5: Stables. In 1862 a new location for stables was chosen in Shipyard South. Today, only Building 88 remains of the original complex. Other outbuildings (blacksmith area, shed, stablekeeper's residence) were present around the stables but have been removed.

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Naval Ammunition Depot

F6: NAD Wharf. The original ammunition area's wharf, built in 1864, stretched into the water from the centerpoint of the depot. The wharf provided the main access to the ammunition area and was a key element. It remained in service until World War II, when it was removed during the war effort. While the majority of the wharf remains have disappeared through intensive dredging activities, the base of the wharf is likely preserved under fill.

F7: NAD Seawall. The magazine sea wall was begun in 1861. Made of sandstone, the wall was six to seven courses in height, 480 feet in length, and was roughly dressed on the exposed surface. By 1866 the wall had been extended north an additional 360 feet. It was extended north several more times by 1896. Filling began in the 1920s and by 1930 the original seawall was located 60 feet inland from Mare Island Strait and was buried under three to four feet of fill. The seawall was uncovered in 1992 and has been determined eligible for the National Register in consultation with the SHPO.

F8: Ordnance Retaining Wall. Built around 1863, this brick retaining wall is composed of mostly stretcher courses capped with one course of headers. Originally, the wall consisted of eight courses of bricks topped with a course of headers and averaged two feet in height. It was raised in some places and extended in the early 1900s and today is over 1300 feet long. Brick buttresses are present behind Building A15, stabilizing the wall. The wall has been determined eligible for the National Register in consultation with the SHPO.

F9: Keeper's House. It is probable that refuse deposits are associated with the watchman's or gunner's house (Building A45). This house was established in 1860 to provide shelter for the magazine Chief Gunner. It still is in use today, although it has been altered. According to historical maps of the area, the gunner's house once had an associated garden, outbuildings (including latrine), and other features.

F10: Civil War Earthworks. Built in 1864, the Civil War defense battery was shaped like an inverted "J" and had 12 to 14 gunpits. A walkway led from the west center of the earthworks to the NAD area downhill. The earthworks were partially destroyed around 1907. Remnants of the earthworks measures 93 feet by 78 feet and are characterized by an earthen bern and a partially visible brick wall from the brick magazine. In addition, an intact portion of the brick walkway that led to the magazines was uncovered during PAR's 1994 work.

Residential - Administrative

F11: Officers' Housing Area. The original officers' housing cluster at Mare Island was built in 1858, but destroyed in the 1898 earthquake. It consisted of single family dwellings and duplexes, each with a basement. Each brick mansion had a long back yard that contained a mix of outhouses, barns, wells, cisterns, or sheds. The earthquake in 1898 and its aftershocks destroyed many of the officers' houses, including the commander's three-story brick house. When rebuilding occurred the duplexes were not reestablished. Single houses were

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constructed, in some cases, on the same foundations or over basements of earlier dwellings. Archeological features associated with the housing between 1858 and 1898 could include discrete trash deposits, refuse pits associated with cleanup activities, filled cisterns, wells, and basements, and foundation remains.

7. BUILDINGS, SITES, STRUCTURES FROM THE PERIOD, 1866-1897

Buildings and Structures

Shipyard North

Drydock #1. Mare Island's Drydock #1, the oldest of four permanent drydocks at the facility and the first on the West Coast, was built under the supervision of Calvin Brown. Brown had prior experience in the construction of Navy facilities at Portsmouth Naval Shipyard and Norfolk Naval Shipyard before assuming his position at Mare Island. The sturdy stone masonry construction of Drydock #1 may be interpreted as an expression of the Navy's intention to maintain a permanent presence on the Pacific Coast and, hence, an indication of the importance placed on Mare Island. In contrast, the 17 year period required for its construction (from 1872 through 1891) may also indicate other issues and projects on a national scale gained precedence over the dock. Drydocks comprise one of the defining features of a shipyard. Mare Island's Drydock #1, built at a cost of \$2,400,000, is 508 feet long, 122 feet wide, and 32 feet in depth. Concrete provided the rough shaping of the dock with stepped granite blocks providing the finished surface. The blocks came from quarries at Crystal Lake, Pino, Rocklin, and Folsom as well as the Griffith Quarry in Penryn, all in California. Virtually unmodified and in excellent structural condition, Drydock #1 is one of the most remarkable masonry structures in California.

Building 50. Building 50 is a two-story brick building of some 3800 square feet in a nearly square floor plan. It is integrated structurally with the 1873 Building 52. Built in 1871 as a dynamo (generator) facility, Building 50 was later converted to a rubber shop. The building features segmental arched openings at its doorways and flat arch lintels and granite sills at its windows.

Building 52. This 1873 two-story brick rectangular Calvin Brown structure originally functioned as the iron plating facility. As such it is perhaps the earliest visual evidence of the change from wood to iron as the principal ship hull material. A notable feature, a large bull's-eye window above the main entrance, continues the form found in many of Mare Island's earliest buildings. Like adjoining Building 50, Building 52 features segmental arch doorways and flat arch windows with granite sills.

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Building 77. Perhaps the best representation of Mare Island's industrial buildings of this period, this two-story rectangular brick structure's original function was that of ordnance storage and administrative offices. (Ordnance stored comprised such non-explosive material as small arms, gun tackle, and boarding pikes.) The exterior materials of this 1870 building are in good condition and maintain their appearance of over 100 years ago when Calvin Brown designed and supervised the construction of this building.

Naval Ammunition Depot

Buildings A5 and A6. Building A5 is also known as Shell House #3. Originally built as a smaller building prior to or about 1890, the shell facility was expanded to its current 3000-plus sf in 1896. The walls are brick. The roof is gabled and metal covered. Since the expansion has been dated to the period following a munitions-related explosion aboard USS *Boston*, it is likely that the building was expanded as a result of corrective action taken in the explosion's wake. Building A6 is generally similar in appearance to Building A5. It was built in 1874 as a replacement for an earlier wooden building that occupied this site. Shell houses are workshops in which the explosive powder is added to explosive shells.

Building A11. Following the *Boston* explosion, the Navy's Bureau of Ordnance undertook a series of revisions in its munitions handling procedures. A direct result is Building A11, a small (720 sf) rectangular brick structure designated as a gun cotton magazine. Its gabled roof is covered in corrugated metal. Like all brick magazines from this period, it features a corbelled brick cornice.

Building A16. A rectangular brick masonry building with a pair of gable roofs, Building A16 is known as a "filling house." Following the *Boston* explosion and subsequent changes in munitions handling practices, some of the functions of shell houses moved to filling houses. The south half of the building is a later addition to the original, 1895 northern section.

Building A20. A rectangular one-story structure of buff sandstone walls and metal trusses and roofing, Building A20 is yet another example of the quality of stone masonry in this area. Built in 1870, its masonry is coursed ashlar with quoins at the corners. Functionally, it is described as a powder magazine, and it is also referred to as Magazine #2.

Building A42. A two-story rectangular vernacular house, Building A42 was constructed in 1890 to serve as a watchman's quarters for the Naval Ammunition Depot. The building has moderately steep cross intersecting gable roofs and is clad with horizontal boarding with narrow v-grooves. The windows are generally double-hung wooden sash, divided into two lights. Although remodelled, the general form of Building A42 has survived.

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Building A44. Traditionally referred to as the Watchman's House, Building A44 is a vernacular two-story frame dwelling with a cross gable roof. Horizontal siding with a v-groove clads the exterior. It occupies the center of the ring of dwellings above the historic magazine area. Unlike most of the living quarters areas on Mare Island, this collection of residences survived the 1898 earthquake.

Ordnance Reservoir. The ordnance reservoir, designed by Chief Engineer Calvin Brown and built in 1873, provided water for fire suppression activities at the NAD and had an earthen dam with a brick gauging station and spillway. The feature was extensively remodeled in 1897 under the direction of Mr. Vogel, who constructed a brick spillway and brick-faced dam. Today the feature consists of a water reservoir including a dam, spillway, and gauging station with a gangway. The reservoir sits in a large swale in the hills at the south end of the island, surrounded by grasslands, live oaks, eucalyptus and acacia trees and is approximately 140 feet long by 160 feet wide. The dam measures approximately 210 feet long and is earthen with sandstone rip-rapping along the waterside. The spillway at the south of the dam has a concrete wall at its mouth leading to a mortared brick channel covered with wooden planking. The circular gauging station is mortared red brick with a wooden depth gauge. A 28-foot long wooden gangway accesses the station from the dam.

Yard Reservoir (Lake Rodgers). Named for Rear Admiral J. Rodgers, the yard reservoir was constructed in 1876 and was notable because of the granite block lining and granite dam.

Residential-Administrative Area

Building 29. Another of the relative handful of 1898 earthquake survivors, this two-story vernacular woodframe structure features a gable roof. Its brick chimney with corbelled cap and hipped porch roof are two of its most distinctive features. Originally sited on Dublin Hill, Building 29 was moved to its present site sometime after 1900.

Building 47. Now a part of a small complex of buildings that contain the headquarters offices of Mare Island Naval Shipyard, Building 47 was built in 1870 on the site of David G. Farragut's original temporary headquarters building. This siting is not in accordance with the original master plan for Mare Island known as the Sanger Plan. Building 47 is a rectangular two-story brick office building with a hipped roof. The walls have flat two-story pilasters and flat brick architrave supporting a wooden cornice, dividing the central block into nine bays. The first story windows have round-headed arches, the second story segmental arches. The pediment features diamond shaped molding and a circular window. With the later addition of Building 521, Building 47 provides the southern wing of the U-shaped headquarters complex. Although Mare Island mythology suggests that Farragut's temporary building was incorporated into Building 47 during construction, the record does not bear this out.

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Building 56. This 1895 woodframe bandstand in Alden Park is an excellent example of a late 19th century bandstand. Since its construction, Building 56 has served as the centerpiece for personnel inspections, awards presentations, and other military ceremonies.

Building P. Known as the Boatswain's House since its construction in 1873, this essentially one-story vernacular frame dwelling takes advantage of a severe roof pitch to provide two upstairs rooms. It has been altered by a series of additions that include a flat-roofed kitchen in the rear and a small porch with square wooden collonettes and side railings. Its siting is in conformance with the Sanger Plan.

Marine Corps Area

Building M1. Building M1 was designed and built as the residence of the commander of Mare Island's Marine detachment. It was built in 1870 as a two-story concrete-plastered masonry structure capped by a hip roof. A single story portico with Doric columns makes up the main entrance. Its original Italianate design has been altered somewhat through remodeling. Although seemingly out of place, Building M1 is sited according to the Sanger plan for the Marine Corps compound. Originally Building M1, along with Buildings M2, M3/M4, M5, and the original Marine Barracks, flanked the south, north, and west sides of a large parade ground. In 1917, with the construction of a new barracks, the bulk of the Marine compound shifted to its current, more westerly location on the island. The relocation of Buildings M2, M3/M4, and M5 and new construction led to the relative isolation of M1 from the remainder of the Marine compound.

Building M2, M3/M4, and M5. Originally built on the north side of the Sanger Plan parade ground in 1888, these two-story woodframe dwellings provided quarters for Marine officers. They were all moved to their current sites in 1952. Although moved, the buildings retain a very high degree of integrity of design, materials, and workmanship. The three buildings are of a Queen Anne/Eastlake design, unique within the building stock at Mare Island. Each is a two-story woodframe building with a multiplicity of gabled and hip roof forms. The gabled element -- dormers and wings -- feature decorative barge boards and turned wooden ornaments. Each is sided in v-groove horizontal boards with shingles in the gable ends. Building M-2 features a square bay, canted and bracketed at the first story. The uniqueness of the Queen Anne/Eastlake design for these buildings indicates the degree of independence of the Marine Corps within the general structure of Mare Island.

Landscape Elements

Alden Park. Still the site of military ceremonies, Alden Park is an irregularly shaped park area that provides a clear demarcation between residential and industrial areas. Its two most notable features are the bandstand (Building 56) and the flagpole. The present flagpole is mounted in the spot occupied by the original shipyard flagpole. Named for Commodore James Alden, a former installation Commandant, the park contains a variety

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of exotic trees brought from the many ports visited by Mare Island's ships. It also contains a static displays of naval weaponry including Dahlgren and several other guns, a ship's bell, and a German World War II human torpedo. The oldest artifact, a ship's anchor, contrasts with Cold War Polaris A-1 and SUBROC missiles.

This open space is the oldest designated park lands on the island. The bandstand is among the only pre-1940 structural elements within the park. Cannons, torpedoes, and missiles are spotted around as military show pieces. The walk that borders the northern edge is constructed of the same 2 feet x 4 feet concrete slabs that are seen elsewhere on the island. This could be a very old paving material. World War II-era bomb shelters dominate the rest of the park. The shelters are covered with vines and create a jungle like feeling to the southern portion of the park. The landscape is very mature with large stands of monterey pine, deodar cedar, eucalyptus, redwoods, beefwoods, locust, maples and black walnuts. Shrubs include cotoneaster, oleander, pittosporum, spirea and escallonia. Ivy is the predominate groundcover. Alden Park is significant as a remnant of the original park layout and as an illustration of the continuing evolution of ceremonial functions and symbols at the island.

Farragut Plaza. Located at the main entrance to Building 47, Farragut Plaza today provides parking for selected occupants of Building 47 and official visitors to Mare Island. From the flat parking surface the plaza's southernmost extremity slopes to 8th Street which separates the plaza from Alden Park. A double run of granite steps with a high granite curb rail with squat square bollards leads from the sidewalk on 8th Street to the parking area. A wrought iron archway sign over the stairway identifies Farragut Plaza. A commemorative plaque and the archway style were mounted during Mare Island's centennial anniversary celebration.

Farragut Plaza is dominated by a circular drive with some very old trees at either side. Of particular interest are two old bunya-bunya trees framing the old building. Labels on the trees date them to the 1880s. Granite chip gutters are seen at the eastern end of the driveway. These appear to be very old and contribute to the significance of this landscape. Other large trees seen here are deodar cedars, camphor, and a Chinese fan palm from the early 1900s. Other smaller plants include, crepe myrtles, photinia, arborvitae, dracena, pyracantha, and silk oaks. Ice plant was planted on the slope.

Landscape at Building M1. Landscape at this residence is made up of several garden rooms. The entry court to the north of the building (along the driveway) is spotted with old post lamps, lawn, large trees, and a formal entry walk to the front door. Street side landscape consists of lawn, secondary walks, foundation shrubs and trees. There is also an enclosed south garden with entertaining area and an old lath house. The backyard is protected from the south by a hedge/wall of carolina jasmine. Notable plants include: pepper trees, deodar cedar, carob tree, fig tree, citrus, weeping willow, english walnut, oleander, roses, iris, boxwood hedge, pyracantha, and yucca.

Clubhouse Drive Park. An important formal landscape exists west and a little north of the main hospital building, Building H1. Now commonly called Clubhouse Drive Park, this landscaped area was created during the 1890s as part of the setting for the residence of a chief medical officer, Building H2, which was built on this site,

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apparently in 1891 or 1984 but destroyed at some point between 1918 and the 1930s. What remains, then, is a remnant of a formal residential design, now adapted for general park use.

Probably the most detailed of all the landscape spaces at Mare Island, the park now lacks a structure to support the different landscape improvements (or rooms). The old entry drive to the north is framed by gate posts. An old sun dial remains near the walk that edges the east boundary. An old fence aligns the walk. A row of Canary Island palms at the eastern edge of the park are a continuation from Cedar Avenue to the north. A mature grove of eucalyptus trees protects the western edge. Street gutters of old brick probably date to the 1890s. At the east edge near the road a formal pond/fountain parallels the walk. A date of 1919 is engraved into the fountain. The 2 feet x 4 feet concrete pavers, as seen in several other locations throughout the base, are also present here. This area is also described as F19 under *Archeological Features* below.

Archeological Features

Most of the areas identified as archeological features in the previous period continue to be used in this and subsequent periods.

Shipyard North

In conjunction with the drydock construction and other buildings erected in this area after 1866, numerous brick cisterns were put underground around the industrial area. By 1893, 14 cisterns were in place in the Shipyard North. In addition, water for industrial use was transported via ditches and pipes to the buildings from the reservoirs. Predicted resources from this period could include foundation remnants and industrial refuse disposal and would be expected around and under Building 879 and 99.

Shipyard South

F12: Second *Independence* Berth. In 1883 a new berth for the receiving ship USS *Independence* was constructed north of the hospital wharf. The USS *Independence* was moved into the Shipyard South area from the North to make room for coal sheds. It was reached by a long pier that extended east from the end of today's 13th Avenue into the straits. The USS *Independence* remained at this berth until 1914, when the ship was towed away and destroyed.

F13: Hospital Pier/Wharf. When the new hospital was built in 1870 a long roadway led from the front of the hospital to the Mare Island Straits along the general route of 13th Avenue. This road was constructed across the tule fields on piers and ended at a wharf. The modest wharf, built in 1869, served the hospital and the stables (Building 88) until 1906. Filling of the tule lands probably preserved the remains of the hospital pier and wharf and archeological deposits are predicted.

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During this time period the stables continued to develop. A corral and other buildings were added to the east of Building 88. In addition, a groom's house, marked as a dwelling on an 1874 map of the base, was constructed near the intersection of Railroad Avenue and 14th Street and provided housing for stableyard staff for a decade.

Naval Ammunition Depot

F14: Watchman's House (A44). Built in 1874, this house once had an associated latrine, sheds, chicken house, garden, and other ancillary structures. Artifactual deposits from this house are predicted to be present around the house, as are structural foundations and other architectural features.

F15: Lighthouse Reservation. Established in 1871, the lighthouse was sited on a point of land at the south end of Mare Island. From 1883 to 1916 it was operated by Kate McDougal, but remained primarily vacant after her death. Although the lighthouse was demolished and its site excavated and removed around 1930, the back area of the reservation was not impacted. Foundation remains from the original water tank, surface artifact scatters, and remnants of sheds are visible today. Subsurface deposits associated with refuse disposal and domestic occupation at the lighthouse reservation are also predicted in the back yard area.

F16: Ordnance Reservoir. The ordnance reservoir, designed by Chief Engineer Calvin Brown and built in 1873, provided water for fire suppression activities at the NAD and had an earthen dam with a brick gauging station and spillway. While the Ordnance Reservoir is a contributing structure of the historic district, predicted archeological features associated with the reservoir include remnants of bathhouses, artifactual refuse deposits, and construction debris.

F17: Yard Reservoir (Lake Rodgers). Named for Rear Admiral J. Rodgers, the yard reservoir was constructed in 1876 and was notable because of the granite block lining and granite dam. Archeological elements associated with this contributing structure include a bricked tunnel that led east from the reservoir and iron pipes. A series of "filling ditches" connected the ordinance and yard reservoirs and remnants of the ditch system, in use through World War II, are still discernible around the hills in the NAD areas.

Residential -- Administrative

F18: Civilian Residential Area. Perhaps the most important development during this time was the expansion of the civilian employees' community around Dublin Hill. While the area of historical Dublin Hill east of Walnut Avenue has been removed and used as fill, destroying any potential archeological resources, the western portion of the civilian housing area, west of Walnut Avenue near Building 535, has remained relatively undisturbed under fill. Predicted archeological deposits could include filled cellars, privies, cisterns, basements, surface sheet scatter of artifacts, or discrete trash deposits. The community began to build up by 1874 and continued until the 1940s. Additional housing was located across from Alden Park (near the site of Building 521) and may also contain deposits.

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In connection with the expansion of housing, several new brick cisterns were placed behind the officers' housing (F11) in the 1890s. These underground brick water storage facilities provided water for fire protection. The housing area was serviced with water and sewer connections that were installed beginning in the 1870s. It is probable that outside latrines were filled and abandoned during the period, as indoor facilities began to be developed. Additional outbuildings, such as animal pens, sheds, and other structures, were also built behind the officers' quarters during this time.

Hospital

F19: Medical Residential Complex/Stables. Development of the hospital in the 1870s led to a need for medical staff housing and equipment. A walkway, constructed on top of a narrow line of fill, led to the pier and wharf that serviced the hospital. In 1891 a house was constructed north and west of the hospital for the medical director's use. This house was surrounded by a vast lawn, concrete walkways, rock work, and other landscaping. A "Japanese summer house" was located behind the house to the west. The house remained in use until the 1960s when it was dismantled. Today a park is located at this site, although the sidewalks, concrete stairs that led to the front entrance, and other landscaping features remain. Predicted archeological features at this location include foundation remains and possible sheet refuse or discrete refuse deposit areas.

Located east of the medical officers' house on the east side of Cedar Avenue was the stable complex that served the hospital. Built in 1874 this area near Seely Circle once contained a barn, corral, and carriage house. It was situated just south of the main naval yard stable complex and may have been operated in conjunction with Building 88.

In addition to the hospital and its outbuildings and housing, the area contained a large brick cistern. This cistern was situated west of the main hospital building and had a 121,526 gallon capacity.

Marines Area

F20: Marine Corps Officer Quarters. The Marine Corps Commander's residence and three officers' quarters flanked the north and south sides of the parade ground in front of the enlisted men's barracks. Sheds, latrines, livestock areas, and gardens were incorporated into the landscape.

F21: Marine Corps Enlisted Barracks Area/Prison. The Marine Corps barracks and prison was located at the site of Building 866. A long outhouse was built behind and west of the prison in 1874 and was expanded into an H-shaped feature in the 1880s. This facility served the marines until it was abandoned in the 1890s. Its location is under fill in the paved area south of Building 1242. Other outbuildings in this area constructed during this period likely include sheds and chicken houses.

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F22: Seawall. In conjunction with the Marine Corps area development came the need to control the bay to the west. Constructed started in 1866 on a granite seawall that spanned the mouth of a U-shaped cove located west of the barracks. This wall held back the sea until around 1898, when filling began in this area. It is now under fill in Farragut Village.

Several cisterns were constructed to provide water for Marine Corps use. Two of these were built by 1874 and were located on either side of West 15th Street near Cedar Avenue. A larger cistern was situated south of Building 108. All of these areas are paved now and it is probable that remnants of these features are preserved under the pavement.

8. BUILDINGS, SITES, STRUCTURES FROM THE PERIOD, 1898-1918

Buildings and Structures

Shipyard North

Building 65. Building 65 is a rectangular two-story brick office and warehouse building, built in 1901. Its walls are divided into bays by pilasters, capped by a projecting course of brick and supporting an entablature of brick courses and a cornice. The gabled roof is capped with glazed monitors. The large pediments at the gabled ends feature large circular windows. Although built in 1901, it conforms to the appearance of its many Classical Revival neighbors built earlier. Building 65 has housed the apprentice school, offices, and printing facilities since its construction in 1901.

Building 73. A brick and corrugated sheet metal building with gable form roofs, Building 73 is an humble-appearing storage building. It may have been a U-shaped brick building when it was constructed in 1898 with the later addition of the sheet metal filling in its current rectangular shape. Perhaps the most significant contribution by Building 73 to Mare Island is found in its historic name, the "oil house," which reflects its early use as a petroleum storage facility. Since local coal was of uniform low quality, management of coal stocks was a long-standing challenge at Mare Island. The introduction of oil-fired boilers to the fleet changed all that. Retrofitting coal-burning ships with oil facilities also meant a steady workload for the shipyard.

Building 99. Now referred to as the "Central Fire House," Mare Island's 1900 fire house was one of the first efforts of Civil Engineer R.C. Hollyday following the 1898 earthquake. It is also the first steelframe building built on Mare Island. The buildings end walls are load bearing brick masonry while the side walls are brick curtain walls. The roof is seamed metal. Its arched brick openings conform with earlier masonry construction in the vicinity.

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Building 99A. Building 99A is a wood post and truss building built in 1905 as an adjunct to Building 99. Its end walls are corrugated iron sheathing over wooden studs. It has a gabled roof. On its southwest corner, an eight foot by eight foot hose drying tower discloses its functional connection to the fire station alongside. The hose tower has been altered and reduced from its original height.

Buildings 100 and 102. In 1902, these two large woodframe buildings were erected between 10th and 11th streets on California Avenue. At some time around 1935 both buildings were moved to their current location. Built to store lumber, these shed structures continue to serve that purpose.

Building 101. Building 101 is a two-story steelframe building with brick walls, built in 1899. The roof is supported on angle iron trusses that support usable office space. The building was designed by R.C. Hollyday and is substantially similar to Building 65, also designed by Hollyday. Similarities include the patterns of pilasters and cornice and the treatment of the pedimented gable ends.

Building 106 and 106A. Building 106 has been referred to as the Boat Shop since its construction in 1904. It is a steelframe rectangular building clad in brick masonry with a low pitched gable roof hidden behind a stepped brick parapet. A ventilation and lighting monitor caps the roof. The designer for this building was H. H. Rousseau who followed Hollyday as Mare Island's Civil Engineer. The building continued Hollyday's tradition of brick masonry facing, to achieve some continuity with the 19th century shipyard buildings. The design, however, departs markedly from the Classical Revival of Hollyday and the earlier civil engineers.

Although listed as a separate building, Building 106A is a 1918 extension of Building 106. It is one-story, clad in vertical corrugated metal siding, and nearly 20,000 additional feet of shop space.

Building 108. Building 108 is a two-story rectangular building clad in corrugated metal siding. Its gable roof features two gable roof monitors at the ridge. Built in 1911 for storage, it continues in that function.

Building 110. Building 110 is an octagonal brick masonry building. Its corner pilasters feature terra cotta bases and capitals. Built as a pumphouse for Drydock #1, it has long been a key functional element of the shipyard. It is also a unique and handsome architectural specimen, significant architecturally despite the presence of intrusive concrete block additions.

Buildings 111, 227, and 227A. Building 111 is a one-story metalframe structure built in 1902 as a machine shop to repair yard engines. Surviving railroad track in the concrete floor support the functional description. In 1918 Building 227 was built alongside of Building 111 as a general storage facility. In 1941, Building 227A, originally a shop stores warehouse, was built between 111 and 227, connecting the earlier structures.

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Building 113. Built in 1899 as a storage facility, Building 113 is a one-story rectangular steelframe building. The lower half of the walls are clad in corrugated metal, the upper half is comprised of 6/6 double-hung wooden sash. It has a gable roof that features three shed roof vents along the ridge.

Building 114. Building 114, the sawmill, replaced the original sawmill which was destroyed by the 1898 earthquake. It is a two-story brick masonry faced steelframe building laid out in a "T" shape. Built in 1901, it occupies some 12,000 square feet. It is quite similar in appearance to Buildings 65 and 101.

Building 115. Built in 1901, this one-story woodframe building is clad with corrugated metal. It originally housed the electric shop, but at some time later it was converted for use as a rubber shop.

Building 116. A rectangular two-story structure clad with narrow sheets of corrugated iron and covered by a gabled roof, Building 116 was built in 1905 as shop facility. It is notable for its light framing, an apparent response to the damage inflicted by the 1898 earthquake to so many of Mare Island's unreinforced masonry buildings.

Building 118. Building 118, a Rousseau designed Joiner Shop, is a two-story brick masonry building divided into three large bays. Its gable roof has a low pitch with a skylighted monitor. The building's facade on California Avenue extends the Classical Revival motif found in so many of the shop buildings in the Shipyard North. Built in 1904, Building 118 evidences masonry damage suffered during the San Francisco earthquake of 1906.

Building 121. The Central Power Plant, Building 121, is a large rectangular steelframe, masonry clad structure with walls 50 feet in height. Its original appearance is dampened by the addition of various tanks, pipes, and other appendages necessitated by changes in technology. Building 121 is significant as a major effort of Civil Engineer C. A. Carlson, who brought a knowledge of private sector technology into his Mare Island work. It is also important as a visual landmark at the base. Its 1938 concrete exhaust stack rises above its surroundings to a height of 200 feet. Most significant, though, is the technological statement made by the power plant's existence. Most shops had depended upon independent power sources to drive their equipment, often by mechanical means. The 1918 construction of Building 121 implemented the new industrial concept of a central generating point from which electrical power could be dispatched. The centralizing of power changed the use and in some cases the form of many of the existing shop buildings.

Buildings 141, 143, 145, 147, 149, 151, 153, 155, and 163. These nine buildings are together one long structure, stretching 700 feet along the northern edge of the old shipyard. The structure was built between 1901 and 1903. It comprises nine identical bays, each with a 71 feet wide clear span. The roof form is defined by the Howe trusses that support it; flat at the top and with moderate pitched slopes to either side. The building was not long used for coal storage; conversion to alternative uses began as early as 1905, as the Navy began its conversion to oil fired ships. The building has been used for miscellaneous purposes since that time, including

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office space and storage. The bulk of the coal storage spaces have been enclosed at the front and rear with a variety of wooden siding. The bulk of the spaces are enclosed with vertically-grooved plywood (Texture 111). These enclosures have diminished the integrity of the building. The general integrity survives in the distinctive Howe truss roof form and the long and low profile along the waterfront.

Building 164. Building 164 is a corrugated metal sided infill structure, filling a space between the 1853 Building 52 and the 1905 Building 116. It was built in 1906, shortly after completion of Building 116. Like its neighbors, it includes a fenestrated monitor. It is lighted by a band of 12/12 double-hung wooden sash.

Building 165. Building 165 is a rectangular steelframe structure with brick end walls. These end walls maintain the Classic Revival appearance established by neighboring buildings. The side walls are metal sheathing. Functionally, Building 165 has served as a pipe shop since it was built in 1905.

Building 207. Another storage building in its inception, Building 207's concrete walls are supported by reinforced concrete piers. The western half of this three-story building has no interior floors above ground level. Some abandoned railroad track exists in the concrete floor of the western half. The eastern half has three floors of reinforced concrete. This warehouse was constructed in 1911.

Building 213 and 223. Building 223 is a one-story woodframe structure with a windowed high central bay. Its ground floor is actually elevated to the boxcar height of the loading dock along its south wall. This storage facility was constructed in 1917. Building 213 is similar in function, construction and appearance, although the central bay is not windowed. Both buildings are clad in corrugated iron panels. Building 213 contains sections of abandoned railroad track in its concrete ground-level floor.

Building 215. Building 215 is a 25,000 square foot, four-story receiving warehouse designed by C. A. Carlson and built in 1918. The pitch of its concrete slab roof is barely perceptible over a plain parapet wall. Building 215 is the last of three warehouses paralleling the quay wall called for in the Sanger Plan. The westernmost of these, its siting required further excavation of Dublin Hill prior to construction.

Building 221. Building 221 is a tall storage building constructed of heavy timbers clad in corrugated sheet metal panels. As with its neighbors, sections of abandoned railroad track can still be found in its concrete ground floor. It was built in 1917.

Building 225. The original two-story section of Building 225, completed in 1918, comprises reinforced concrete walls on a concrete slab foundation. It has a flat roof with formed cornices at the parapet. In 1943-44, an addition was erected on the north end of the building. Originally the plating and finishing shop, Building 225 saw use as a general storage facility and battery repair station.

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Building 235. Building 235 was built in 1918 as office space and for a time served as the base printing plant. It is a rectangular two-story woodframe building clad in corrugated metal siding. The building has a gable roof with wide exposed eave overhang. The enclosed main entrance into Building 235 features wood pillars with plain capitals. A shed roof awning that runs the length of the western side of the building, shading the entrance, appears to be a later addition. The same is true for an enclosed walkway that connects Building 235 and Building 65 at the second floor.

Building 237. A storage facility built in 1918, Building 237 features a wide two-story central bay with narrow single-story side bays. It occupies 42,000 square feet. It is of heavy timber construction clad in corrugated sheet iron. It features a high concrete base and a loading platform along the western wall. The now unused railroad tracks are still in place beside the loading dock.

Building 253. One of the many storage facilities built during this period, Building 253 is of heavy timber construction and clad with corrugated steel. It features a tall gable-roofed clerestory monitor with shed-roofed aisles. Three-story side aisles with floors on each story open onto a center gallery of free space that reaches over 60 feet to the roof trusses. A 1918 structure, the timber framing in Building 253 serves as a reminder of the availability of wood and the comparative paucity of steel on the Pacific Coast.

Building 257. Building 257 was constructed in 1911 as a warehouse. It is a long one-story woodframe structure with four gable roof forms spanning its width. Its walls are clad with corrugated sheet iron. Later one-story wooden additions join the north wall and the west wall. Loading doorways spread along the sides of the framing order offer an interesting contrast to the concept of end entryways so prevalent at the time.

Building 271. Building 271 is an excellent example of curtain wall construction for industrial spaces. It cannot be said with certainty whether C.A. Carlson brought curtain wall construction to Mare Island on his own or was directed to do so by planners at the Bureau of Yards and Docks; numerous examples of this type of construction from this same period exist at other naval installations. In either case, Building 271 provides an excellent example of this important industrial building technology. The curtain walls are 60 feet high and 200 feet long and made of units of three-inch thick panels of cement plaster on metal lath and industrial steel sash. The building's dimensions are 330 feet long by 165 feet wide.

Building 334. In 1918, this rectangular three-story steelframe building was constructed near the waterfront to provide office and storage spaces. Building 334 features stucco walls and a gabled central roof section with shed roof wings on the east and west sides of the building.

Drydock #2. If Drydock #1 symbolizes the decision by the U. S. to maintain a naval presence in the Pacific, Drydock #2 represents a statement that the presence will be in the form of capital ships. 740 feet long, 120 feet wide, and 36 feet deep, Drydock #2 was built with the Great White Fleet style of battleship in mind. Just as

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appropriations disputes held up the construction of Drydock #1, so too did construction of Drydock #2 suffer long delays. This time, however, natural conditions, not politics, held sway. Owing to the mud and clay of its tule marsh location, actual drydock construction could not continue until some 13,000 piles were driven. Three different construction firms tried to build Drydock #2 before it was finished in 1910. The first effort included famed California engineer, Alexis von Schmidt, as its superintendent.

Shipyard South

Building 206. As with many other of the general purpose buildings at Mare Island, the uses of Building 206 have been many and varied. It was originally the Rodman Center Annex, a recreational facility for enlisted men at the shipyard. The first functional and significant change to the building came in 1943 with the addition of a northwest wing. The new wing was the industrial laboratory and storehouse, indicating that the building's recreational function may have ceased earlier. This continued through the 1980s when the industrial laboratory finally closed. Constructed in 1917, Building 206 is of woodframe construction clad with corrugated metal sheathing. It is a two-story building with an auditorium on the second story.

Building 208. One of many general purpose buildings, Building 208 housed such disparate activities as the South Central Cafeteria, Shipyard Comptroller, and employee union offices. Its original function was that of apprentice training school with the switch to the more general purpose use coming in 1945. Built in 1917, it occupies roughly 25,000 feet. In general it is of woodframe construction and clad with corrugated metal sheathing, although some exterior wood paneling has been added in conjunction with the cafeteria.

Building 302. An office building of about 2600 square feet, Building 302 is a corrugated metal clad rectangle with a gable roof. It was built in 1917.

Naval Ammunition Depot

Building A2. Built in 1906, Building A2 is a one-story brick masonry ordnance warehouse with an area of 2400 sf. The building has a gable roof with brick cornice. Entrance is gained through a single steel door located at the north end of the building. The only two original windows in the structure have been filled in with brick. The lower third of both the east and west walls of Building A2 are covered with a recent concrete patch and new concrete stairs lead to the single doorway.

Building A8. Building A8 is a one-story rectangular warehouse built in 1903. It is a steelframe structure clad with corrugated metal siding supported on a concrete slab foundation. The gable roof is also constructed of corrugated metal. Windows and doors are also constructed of corrugated metal plates. The structure has an area of 2200 sf.

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Building A15. Building A15 is a small 800 sf rectangular brick masonry building built in 1902. The one-story structure with gable roof was originally constructed as an ordnance warehouse. The building features steel windows and one six light casement. Several other window openings have been bricked in. A porch with shed roof is located on the north end of the building.

Building A17. Building A17 is a 3900 sf one-story brick masonry magazine built in 1905. The building features a gable roof and corbelled cornice. A steel double-door on the north side of the building features an original granite sill. Additional entry into the building is gained through a steel sliding door. Concrete framing around doors and windows appear to be a later addition.

Building A25. Building A25 is a roughly rectangular woodframe one-story residence, built in 1911. It has shingled walls and double hung 1/1 wooden windows. It has a shingled pent roof parapet, hiding a flat roof. The building was apparently built as an office building, later converted to a residence.

Building A31. Built in 1905, Building A31 is characteristic of magazines built at Mare Island following a 1901 explosion. The explosion was attributed to the decomposition of smokeless powders, then a new explosive at the base. Although volatile, smokeless powder was seen as of great military value. As a precaution against additional explosions, the Navy built several small and widely dispersed smokeless powder magazines at Mare Island. Building A31 is the sole surviving example of this type of building. It is a 2400 sf, single-story reinforced brick building with a gabled roof covered in corrugated metal.

Building A43. Building A43 is a two-story woodframe residence with a hip roof. The walls are clad with horizontal boards with v-grooves and trimmed with flat corner boards. The windows are double-hung 1/1 wooden sash. Constructed in 1908, the building originally served as the residence of the Commanding Officer of the Ammunition Depot.

Buildings A49 and A65. Built in 1917 as ordnance warehouses, these two nearly identical buildings are positioned in-line and connected by a steelframe open storage area. Both Building A49 and Building A65 are one-story gable roof brick masonry structures with corbelled brick cornice and pediment. Building A65 features steel windows with concrete sills and lintels. Although the windows in Building A49 have all been bricked in, brick sills and slightly arched brick headers can still be seen. Both buildings feature steel doors with concrete headers. A concrete loading dock extends the entire length of the north side of both buildings.

Building A54. Constructed in 1914, Building A54 is a one-story rectangular storage facility of reinforced brick on a concrete foundation. Its gabled roof mounts two ventilators. A loading dock runs along the south wall. Building A54 has been referred to as "galley storage" for a number of years. It is of similar construction to the other magazine buildings of about this time. It occupies some 5300 square feet.

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Buildings A72, A76, and A80. Damage and destruction of many buildings in a 1917 explosion in a black powder magazine resulted in the rather hasty erection of new magazine buildings, of which A72, A75, A76, and A80 are the remaining examples. These were built to standard designs adopted by the Navy's Bureau of Ordnance shortly before World War I for reasons unrelated to this Mare Island explosion. Building A72 is a single-story rectangular building of steelframe construction. The exterior siding is corrugated metal, and the gable roof is gravel and asphalt over corrugated metal. Building A72 is 7550 square feet in area and is the only example of these four to have remained in its original function throughout its useful life. It was built in 1918. Building A75 was built in 1918 as an ammunition storage building. In 1939 its function was changed to the fabrication of powder bags, restoration of ammunition shipping tanks, and warehousing of materials produced in Building A76. A conveyor was installed to connect the two buildings at that time. Building A75 is nearly 32,000 sf in area. Its gable roof sits atop a two-story steelframe structure clad with corrugated metal. The roof is asphalt and gravel over corrugated metal panels. Building A76 was built of corrugated metal sheathing over a steel frame in 1917. The gable roof comprises an asphalt and gravel coating over corrugated metal. It is a single-story structure. Originally Building A76, an ammunition storage building, was in a north-south alignment. In 1942 it was rotated 90 degrees and moved a bit to the north of its original site and redesignated as powder bag fabrication and a print shop. Later it became a shipping container overhaul facility with grit blasters, paint booths, and test facilities. It is connected to A75 by a covered conveyor. Building A80 is a 7836 sf one-story rectangular building. The exterior siding is corrugated metal over a steel frame. The roof is also corrugated metal. Originally designated for ammunition storage and fuse segregation, Building A80 became a tracer bullet loading plant in 1936.

Underground Ammunition Magazines. By the beginning of World War I, the Bureau of Ordnance had adopted standardized designs for the construction of magazines at new naval ammunition depots. Under the standardized design, black powder, gun cotton, and other potentially explosive materials were to be stored underground in isolated areas for safety and temperature control. Subsurface magazines were to be constructed with reinforced concrete walls, floors and roofs, and built into the side of hills. Steel doors, framed with concrete wings for added protection, provided the only entrance into the buildings. Four of these subsurface magazines, all built in 1918 into the hillside northwest of the Mare Island Cemetery, remain today. (Buildings A81, A82, A83, and A84).

Residential-Administrative Area

Building 6 and M7. These two nearly identical woodframe residences were built in 1915 as quarters for Marine officers stationed at Mare Island. The single-story Colonial Revival buildings are clad in narrow clapboard siding and have a gable-on-hip roof. The roofs feature a broad overhang and boxed eaves. The buildings are supported on raised concrete foundations. Each house features a three-sided bay on both the north and south sides of the building. Windows are 1/1 double-hung sash. The main entrance into both structures features a hip roof porch supported by square columns with plain capitals. Building 6 features a rear addition not found on Building M7. Sited along the north side of the old Marine Corps parade ground, the relocation of buildings and subsequent new construction has isolated Buildings 6 and M7 from the rest of the Marine compound.

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Buildings 17, 19, 21, and 131. These four vernacular residences are located in the northern end of the residential-administrative area of Mare Island. Base records indicate that all were built near the turn of the century (1898-1899) in an area of the base then set aside for civilian employees. Building 131 is known to have been moved to this site from Dublin Hill, while the other three appear to be in situ. These homes were built by and for employees with round-the-clock responsibilities: Building 17 for a supply, account, and freight clerk, Buildings 19 and 131 for electrical machinists, and Building 21 for the mail messenger. Modest vernacular homes, the buildings are in very original condition except for the relocation of Building 131.

Building 47A. Building 47A is a woodframe addition to the east side of Building 47, the 1870 Headquarters building. Measuring 13,800 sf, the addition is sided in board and batten and includes bands of tall 6/6 double hung wooden sash. Constructed in 1917, the building reflects the increasing demands on administration of the base. The complex would be expanded again during World War II with construction of Building 521.

Building 103. Built in 1898 near the ferry slip, Building 103 originally housed the Board of Labor and the shipyard Disbursing Office. In about 1910 the building was moved to accommodate the enlargement of the building ways. During World War I, Building 103 was relocated a second time. A short time afterward the building was raised and a first story added. During the 1940s Building 103 was moved yet again to its present location. The core of Building 103 is a woodframe, hipped-roof building in a Classical Revival design. The original building included a denticulated cornice and broad boxed eave at the roof line. Its tall windows are 6/6 double-hung sash with decorative surrounds. The 1920s additions were generally sympathetic, repeating the tall windows and surrounds and introducing tall parallel doors with transoms. Because the additions are flat-roofed, however, the overall composition seems somewhat off balance.

Building 104. Building 104 is St. Peter's Chapel, built in 1901 on designs by Albert Sutton. It is a one-story woodframe cruciform church with a steep gabled roof. The walls and roof are shingled, as are buttresses that line the side walls, aligning with the roof trusses. The building, notable for its Shingle Style design, includes Tiffany-designed art glass windows. The spire is capped by a wooden finial and metal cross. The architect, Albert Sutton, practiced only briefly in California, chiefly in partnership with Charles Peter Weeks. In 1916, he returned to his native Portland, Oregon, where he practiced until his death in 1923. This building, in addition to its intrinsic merit, is a rare example of Sutton's work in California.

Building 133. Building 133 is a one-story house built in 1899. The building is supported by a concrete slab foundation that appears to be more recent than the rest of the structure indicating that Building 133 was moved to this location, perhaps from Dublin Hill. The woodframe structure is clad in drop-siding. A chimney from a central fire place rises from the ridge of the hip roof. Windows include 6/6 double-hung wooden sash. The main entryway to Building 133 features an enclosed front porch with pilasters and plain capitals.

Building 229. Building 229 is a 39,443 sf reinforced concrete, industrial building built into the slope of a hill north of Building 561. It is dominated, both visually and structurally, by a symmetrical, reinforced concrete post

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and girder frame with steel, industrial sash curtains. Decorative elements are minimal, but include handsome panels in the spandrel areas, a bowed parapet detail centered on the north and south elevations, and a castellated pattern at the roof line, created by the continuation of the concrete posts. The building is almost completely unmodified. Some window openings have been infilled at the southeast corner. It is connected to Buildings 521 and 125 by an elevated, covered walkway.

Building 255. Building 255 was built in 1918 as a one-story transformer house and altered at some undetermined date by the addition of a second story which attaches to Building 47. It has contained a plan files vault and flammable liquids storage since the 1950s. It is constructed of reinforced concrete on a concrete foundation. It is a square 11 feet by 11 feet.

Building A. Building A is a rectangular, T-shaped two-story woodframe building set on a raised basement. It has a hipped roof penetrated by an attic story. A two-story pedimented Ionic columned portico projects over the central entrance. The porch columns support a full entablature with dentils. The building is sided in flush boarding. The Commandant's House is located at the center of officers' row, which was rebuilt at the turn of the century to replace earlier officers' housing destroyed in the 1898 earthquake. The entire group is in a Colonial Revival design, typical of housing for ranking military officers of the period.

Buildings B, C, D, E, H, J, K, L, M, N, O. These 11 homes complete, with Building A, the 1900 Officers' Row along Walnut Avenue. While not truly identical, the buildings are substantially the same and together present a coherent core to the residential-administrative area. All are in the Colonial Revival classicism of Building A. All are two-story woodframe with flush horizontal board siding. Each includes a one-story porch supported by Ionic columns and a full entablature. Most include a half-octagonal bay window and a hipped dormer at the attic level. Each includes a denticulated cornice at the eave line. Like Building A, these homes were constructed in 1900 to replace officers' housing destroyed in an 1898 earthquake. These homes have been reserved for officers with specific responsibilities on the base. Originally, the functions ranged from the base civil engineer to the yard surgeon and paymaster.

Building I-T. Building I-T is an H-shaped three-story woodframe building with hip roofs. The central portion of the second and third stories is recessed creating porch-like areas. The first story protrudes at the center to form a porch whose cover is supported by six fluted Doric columns. Apparently built to house bachelor officers, Building I-T now contains two sizable family apartments. It is yet another example of Hollyday's Classical Revival style. Bordering the Marine compound, its appearance is reminiscent of some of the Marine officers' quarters. The original construction took place in 1900.

Building R. One of the few houses remaining in the residential area from the earliest years of the development of Mare Island, Building R was constructed in 1898. It is a 1507 sf woodframe residence.

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Hospital

Building H1. The first hospital at Mare Island was constructed in 1869 in accordance with the Sanger Plan. This original 80-bed unreinforced brick masonry building was seriously damaged in the 1898 earthquake. It was subsequently torn down and replaced by the existing Building H1. Building H1 uses the stuccoed masonry walls of the ground floor of the original hospital as its own foundation. It consists of a main, central area of three-stories with two-story wings affixed to its northern and southern ends. A two-story portico supported by fluted Ionic columns provides a covered main entryway. The entire building is of woodframe construction and was designed by Washington, D. C. architect, W. M. Poindexter, and constructed under the direction of R. C. Hollyday, then a Navy Lieutenant. Hollyday supervised the base's reconstruction following the 1898 temblor and went on to become a Rear Admiral and Chief of the Navy's Bureau of Yards and Docks.

Buildings H4 and H5. Buildings H4 and H5 are rectangular two-story woodframe buildings with gable roofs. Paired Tuscan columns frame the entry porches, both of which have been screened. Walls are clad with bevel siding. Flat corner and frieze boards lead to a cornice with double-coursed dentils. The chimneys are of red brick with corbelled caps. The windows are double-hung with flat wood casings. Each porch supports a shed-roofed second-story addition. Originally quarters for Medical Corps officers, Buildings H4 and H5 have been moved slightly to the west of the location they occupied when completed in 1903. The ground floors provide 875 sf of living space.

Marine Corps Area

Building 84/84A. Building 84, the Naval Prison, was built in three stages. The first stage was completed about 1895, the second 1901, and the third in 1909. The first stage was of simple brick masonry with a low-pitched wood rafter gable roof. Its windows were large and gridded with iron bars. Phase two also was of brick masonry with steel trusses. Windows were double-hung sash, and gridded. The final phase was of concrete poured against smooth board forms and painted. The dimensions of the full structure are 210 feet X 111 feet. In 1939, a 2916 sf warehouse addition was attached to the northwest corner of Building 84. Although the 1939 addition was given a separate facility number (Building 84A), the two actually comprise one structure.

Building M37. Building M37 is the centerpiece of the Marine Corps compound. Originally located along Cedar Avenue, the entire compound was moved to the west when construction of this building in 1917 replaced the older Marine barracks. Building M37 is a three-story E-shaped building on a raised foundation. The three-story main stem features a hipped tile roof, as do the two-story wings that project from either side of the facade. Seven tiled hip dormers project from the roof. The facade looks to the west over a paved area followed by a large grass field that served as parade ground and athletic fields. This building replaced the original headquarters building, so its location represents a departure from the Sanger Plan. However, the arrangement of the entire Marine Corps area around Building M37 as the centerpiece certainly is in keeping with the functional concept of the Sanger Plan.

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Building M63. Historically the Marine Barracks Motor Pool facility, Building M63 is a woodframe rectangle sheathed with corrugated metal siding. Its low-pitched gable roof also is of corrugated metal. Two original 8 feet x 8 feet sliding doors still provide vehicle access. Two personnel entries have been added. Window glass has been replaced with plywood. Building M63 was built in 1910.

North End

Building 231. Building 231 is a two-story rectangular structure with a gable roof. The first story is framed in painted concrete. The second story is clad with painted corrugated iron. A small bay with a gable roof protrudes at the center of the east wall. The main windows at ground level are 12 light and those of the second story nine light. The north end has large double metal doors framed with heavy timber and centrally placed. This 1918 building is one of the few remaining structures built to maintain the steam railroad trains that formerly served Mare Island.

Landscape Elements

Chapel Park. A large triangular open space between Alden Park and Walnut and Cedar Avenues, Chapel Park surrounds St. Peter's Chapel. It contains many varieties of trees, especially eucalyptus. This area has been known as Chapel Park since the dedication of St. Peter's in 1901.

Some of the oldest and best cared for trees at Mare Island may be observed in this park. The park is approximately as old as the chapel building, although landscaping likely developed somewhat more slowly than building construction. The park has no formal order and is dominated by large trees and open lawn. Shrubs are planted at the foundations to the chapel. Other large shrubs are pruned as small trees in the lawn area. Very large eucalyptus form a row along Walnut Street. The park area is dominated by eucalyptus g., coast redwood, incense cedar, pittosporum, and a giant redwood (*Sequoia giganteum*) at the front of the chapel.

Landscape -- Palm Trees. Eighteen large palm trees line Cedar Avenue between 12th and 14th Streets. Since their planting in 1900 they have served as a separation line between the Marine Corps and residential areas and the industrial areas.

Landscape at Officers' Row. Officers' row, sometimes called "Captain's Row," comprises a series of 12 very large Colonial Revival homes along Walnut Avenue. These homes date to the late 1890s but replaced much earlier homes built on the same sites but destroyed in an 1898 earthquake. Not surprisingly, landscapes in and around these homes are well-maintained. There is no easily identifiable theme for these landscapes, except to say that the gardens are mostly lawn, with a row of street trees at the curb. Other trees are scattered throughout the gardens. The street walkway and entry walks are constructed of special shaped pavers. Steps at the south end of the walk, near Chapel Park, are constructed of granite. Smaller garden rooms exist throughout the landscape from small and large paved patios, rose gardens, fruit tree plantings, and so forth. Each backyard is

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more individualized than the front yards, but are still predominantly lawn. Some backyards contain porches, patios, recreation areas, greenhouses, or play structures, to name a few items. Very few historic outdoor structures, such as trellises or gazebos, are present. Plants noted include: southern magnolia, palms, birches, pepper trees, roses, avocado trees (old), arizona cypress, privet trees, old acacia trees (several types), ailanthus trees, bird-of-paradise, English walnut, purple leaf plum, fig tree, pittosporum, ivy, redwood (some very large), a rare tree at southern most residence (apparently *Bellota cryptocary*), eucalyptus (several varieties), camphor tree, *myrtus communis*, large spruces, cotoneaster, Monterey pine, buxus, camellia, English laurel, oleander, juniper, Oregon ash, silk tree, large locust tree, large sycamore, wisteria, bergenia, ginko, and Canary Island date palm. These mature landscapes are significant as examples of formal landscape architecture and as the immediate setting for this stately group of residences.

Archeological Sites

Shipyard South

F23: USS Independence Crew Quarters. The drill hall, latrine, and bathhouse used by the *USS Independence* crew were built in 1899 in the general vicinity of Building 630. Remnants of these outbuildings and the base of the *USS Independence* wharf are predicted to occur under fill and under the building at this vicinity. Expected features include trash deposits, foundation remains, wood piers, and structural remnants.

F24: Hospital Wharf. The hospital wharf was greatly expanded after 1900. Several buildings were constructed at this wharf and are associated with the activities. Remnants of the wharf, discarded tools, and refuse could be present under fill in this area.

Naval Ammunition Depot

F25: Torpedo Boat Wharf. A major facility labeled a Torpedo Boat Wharf was built in 1904 and was situated between buildings A224 and A225, extending into the strait. Two perpendicular docks, each containing a building, extended south from the wharf. This facility played an important role in ammunition transport during World War I but was removed by 1929. Remnants of this wharf may be present under fill in the NAD area.

Hospital

F26: Bandstand/Pavilion. A bandstand and pavilion were located in front of the hospital and provided a meeting place for dignitaries and a place for entertaining patients. These locations are marked by circular raised concrete platforms, steps, and portions of walkways.

North End

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F27: Submarine Base/Wharf. Perhaps the most significant feature in the north end dating to this period is the submarine repair dock and associated facilities. The area generally between B and E streets and Waterfront and California Avenues may contain deposits and structural remains associated with the submarine repair station.

9. BUILDINGS, SITES, STRUCTURES FROM THE PERIOD, 1919-1938

Buildings and Structures

Shipyard North

Building 273. Another innovative design brought to Mare Island by C. A. Carlson, Building 273 is an example of flat slab construction. It is five stories with a footprint measuring 104 feet x 84 feet. A rather plain, slightly projecting cornice caps the top floor. Above, a small parapet wall surrounds the entire flat roof. Stairwell and elevator penthouses are mounted on the roof above a central north-south bay. It was completed in 1921.

Building 373. Building 373 is a timber framed, corrugated metal clad storehouse of some 12,000 sf, built in 1920. The roofs of the two-tiered side bays are nearly flat. The slope of the gable of the high central bay roof is so slight as to be nearly unnoticeable. A flat board fascia trims the roofs at both levels. Windows have been replaced to varying degrees: one modern paired casement has been installed in the south wall; other south wall windows have been covered; sheets of obscure glass have replaced the original sash in the north wall.

Building 387. Building 387 was built in 1920 as storage and office space for operations in the submarine repair base. It is a large (31,120 sf) one-story rectangular woodframe building clad in corrugated metal. The eastern end of the building, located nearest the waterfront, is office space. The western end features a loading dock and many large industrial doors opening into large interior storage areas.

Building 632. Located on Building Ways #2, Building 632 was the issue station for welding materials used in ship construction. It is a 1933 woodframe structure sheathed in corrugated galvanized siding. The roof is hipped and covered with similar corrugated material. Two sheet metal awnings project over the issue windows on the south side of the structure.

Building 634. Located adjacent to Building 632 on Building Ways #2, Building 634 was constructed in 1932 as a lunch room, locker room, and utility storage area for shipyard personnel.

Building 855. Building 855 was built in 1925 as a wing of Building 165. It became free-standing in 1952 when a fire destroyed the intermediary portion of Building 165. The building has served in a variety of capacities that have altered its exterior appearance only slightly. A 2236 sf one-story rectangle, Building 855 has walls of poured concrete to about half their height, topped with corrugated steel sheets. The moderately pitched front-

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gable roof is covered in similar corrugated material. Several styles of doors are used to suit its varied industrial applications. Heavy concrete interior walls were added in 1956 when the building's function changed to that of radiographic facility.

Shipyard South

Buildings 386, 388, and 390. The most significant structures from the period in the Shipyard South are Buildings 386, 388, and 390. Essentially one large building near Drydock 3, the complex comprises a huge steel-framed curtain wall building, consistent in construction methods and architectural treatment with the buildings of Carl Carlson during the World War I era. The combined floor space is about 340,000 sf, with massive clear spans and roof heights for ship construction. Built in 1922, the complex was the building in which "ships were built." The only single structure at Mare Island designated with three separate building numbers, the west bay (Building 386) was the Forge Shop, the central bay (Building 388) was the Structural Shop, and the Shipfitting Shop (Building 390) occupied the east bay. Structural steel components that became destroyers, nuclear submarines, and other vessels were cut, rolled, welded, or formed in this complex. The building plainly expresses its function as the shipbuilding core of the base and is highly significant as an example of 20th century factory design in addition to its obvious significance in the business of shipbuilding. These buildings established the viability of the Shipyard South area and formed the nucleus of the shipyard operations during World War II.

Drydock #3. Constructed by George Pollack, this third permanent drydock at Mare Island was begun in 1937 and completed in 1940. The chief engineer for the project of constructing the concrete structure was Edwin P. Davenport. In addition to building drydocks for the Navy at San Diego and Pearl Harbor, Davenport was involved in the constructing both towers and stringing the deck of the Golden Gate Bridge.

Naval Ammunition Depot

Building A58. Quarters Building A58 was built by 1930. It is a 1008 sf rectangular residence with a gable roof. It has an enclosed porch. The house is clad with v-groove horizontal boards with flat corner boards and window casings. The principal windows are double-hung wooden sash. Building A58A is the accompanying garage.

Buildings A130/A131. Buildings A130/A131 are two single-story warehouses of concrete frames and walls. The steel framed gable roofs are covered with flat cement asbestos tile. Raised concrete loading docks run the length of each. They flank, yet have no physical connection, World War II era Building A258. Originally designated for general ordnance storage in 1921, they were converted to general storage with the closure of the ammunition depot.

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Building A154. Built in 1931 as a projectile loading platform, Building A154 was converted to a general storehouse and washroom in 1943. About 80 percent of the original building still stands following the washroom conversion. A one-story rectangular steel frame structure mounted on a concrete slab, Building A154 is closed only on its west side with corrugated steel panels. The medium gable roof is covered with similar corrugated panels. It has an area is 4390 sf.

Building A159. In 1933, this large two-story building was constructed along the waterfront in the Naval Ammunition Depot as a bag charge and filling house. The first floor was divided into three sections (a priming room, a stacking room, and a tanking room) divided by concrete firewalls; the second story was used as a smokeless powder room. At Building A159 large bags were assembled and installed in air-tight ammunition containers. Also fixed and semi-fixed ammunition cartridges were broken down and renovated.

Ammunition Magazines. The most pronounced change in the ammunition depot during the interwar period was its expansion of magazines into two new areas: 1) up into the hills of the golf course, and 2) around the southern tip and along the west shore of the island. The construction of new magazines during this period fall into two periods, 1927 and 1931-1938, and are easily differentiated by geographical location and style of construction. The 1927 magazines are located up in the hills on the golf course. Originally there were a total of seven ammunition storehouses located in this area. Of these seven, only three remain (Buildings A139, A140 and A141). All are of woodframe construction with corrugated metal siding and were probably intended as temporary magazines to be used until the ground was prepared for future ammunition storage around the south and west sides of the island. In 1932 a high explosive magazine (Building A156) was added to this group. It is a reinforced concrete magazine buried into the hillside.

Beginning in 1931 a series of standardized concrete high explosive magazines were erected along the south and west shore of the island. Six nearly flat roofed, reinforced concrete magazines (A147, A148, A149, A150, A151, A152) were spaced out at a secluded location along the base of the hills on the west side of the island in 1931. Six side gabled, reinforced concrete explosives magazines (A161, A162, A164, A165, A166, A169, A170) were added in 1934 along the south and west shore of the island and two (Buildings A167 and A168) were constructed the same year in the hills overlooking the old ammunition depot. Three years later A171 and A176, both high explosive magazines, were built in the remote bluffs near Jenkins Circle. When the Pacific fleet was expanded in 1938, four additional side-gabled magazines (A172, A173, A174, A175) were built on recent fill along the southwest shoreline of Mare Island.

Residential-Administrative Area

Building 376. Built in 1920, Building 376 was used as a dispensary until 1922. At that time the single-story woodframe building became the living quarters for personnel working at the U.S. Naval Low Frequency Transmitting Radio Station (Building 433). The building exterior is constructed of lapped wood siding on a

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formed concrete foundation. It has a side gabled composition roof and wooden double-hung windows. In 1971, Building 376 was converted to duplex housing for military families assigned to the shipyard. Later it was used for as temporary quarters for military families in transit between duty stations.

Buildings 411, 420, 429, and 431. These one-story woodframe residences with low pitched asphalt and gravel roofs were built in 1921 as quarters for married officers stationed at the Naval Radio Station. The wood-sided exterior walls are divided into a base of wide horizontal clapboard siding up to the sills of paired double-hung windows. Each residence is outfitted with a square-columned, screened porch. Although the communications facilities no longer exist at Mare Island, the remaining residential quarters serve as a reminder of the importance of this activity.

Building 417. Building 417 is a woodframe, L-shaped structure built upon a concrete slab foundation. The building is clad in vertical galvanized steel panels. Constructed in 1922 to store the vast quantities of surplus medical supplies that were returned to shore facilities from ships after World War I, the building continued to serve as part of the Medical Supply Depot until the beginning of World War II. In 1938, Building 417 was rotated 90 degrees to accommodate the construction of Building 497. Portions of Dublin Hill were removed to allow this rotation. At this same time it was expanded from 48 feet wide to about 110 feet wide. In 1941, it was converted to a warehouse for stationary supplies and three years later a north wing was added, bringing Building 417 to its current dimensions.

Building 433. Building 433 was constructed in 1922 as the U.S. Naval Low Frequency Transmitting Radio Station. It is a one-story, rectangular, brick structure. The two-tiered, flat roof with parapet walls includes a metal fascia along the roof perimeter. The bricks are laid in a common bond with a decorative cornice and base course. Window openings included round-headed arches on the taller western segment and jack arches elsewhere. All window opening have been bricked in. There is a 15-foot high brick wall with a cyclone fence extension on the north end of the building. Three openings on the south side are covered by steel doors. The building includes large steel industrial double doors; the west side double door has an opening over it that has been bricked over. In the late 1950s, the radio station ceased operations.

Building 497. Built in 1938 as a dispensary, Building 497 now serves as the Mare Island's security office. A "T"-shaped poured concrete structure on a raised concrete foundation, the former dispensary's facade features a recessed double door entryway surrounded by cast stone. Both concrete and wooden stairways provide exterior access to the second story. The hipped roof is pierced by four equally spaced gabled dormers, all covered with composition shingles.

Building G. One of many commissioned officers' residences at Mare Island, Building G was built in 1938 on the site of what was designated a brick duplex according to the Sanger Plan. It is a "T"-shaped one-story woodframe structure on a concrete foundation. The gabled roof is covered with composition shingles. The exterior walls are sided in V-groove boards.

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Building U. Somewhat similar to Building I-T, Building U is a square two-story woodframe structure with a gable roof. The walls are clad with bevel siding. Paired double-hung windows trimmed with flat board architraves flank the central entrance in a small one-story portico formed by two Tuscan columns and a plain entablature. The roof fascia is embellished with a crown molding. This 1921 officers' residence complements the much earlier homes along Officers' Row.

Hospital

Building H70. A two-story rectangular Spanish Colonial structure with a tile roof, Building H70 was added to the hospital complex as a medical ward building in 1926. A central bay is accentuated by a four-foot projection through the facade. The far end bays are recessed and flat roofed. The main entrance door has a simple architrave. Windows are 6/6 double-hung wooden sash. Exterior walls are poured-in-place reinforced concrete. After the conversion of the hospital buildings to school buildings, Building H70 became the Guided Missile Laboratory.

Building H71. A 1927 two-story H-shaped building with extending wings, Building H71 emulates the other hospital buildings. It is constructed of reinforced concrete and features double-hung wooden sash. It has an arcaded ground floor entrance. Arched forms, hip tiled roofs, flat balconies, and thin arched panels ornament the surface. It became enlisted barracks after the hospital converted to a training facility.

Buildings H72. This is a long, narrow L-shaped structure of three to five stories of reinforced concrete, attached to the north end of Building H1. Building H72 was constructed as a general hospital ward in 1926 in an effort on by the Navy to modernize its medical facilities. The building features 6/6 double-hung sash. The hip roofs are covered in red tile. It and Building 80/81 stand as bookends for the 1899 Building H1.

Building H73. Another 1926 addition to the hospital complex, Building H73 is a U-shaped reinforced concrete hospital ward building in the Mission Revival style. It is of two- and three-stories to fit into the hillside. Its hipped roof covered in Mission tiles, consistent with other mid-1920s buildings in the area. The extreme ends of the building's wings are flat-roofed, further conforming to the style of H-72 and H-81. It features symmetrically distributed 6/6 wooden double-hung sash on all elevations except at the eastern end of the two side wings, where the windows are wooden casements. Original built as the "sick officers' quarters," Building H73 is somewhat more richly decorated than other mid-1920s hospital buildings.

Building H74. Building H74 is a reinforced concrete utilitarian structure built in 1928 as the hospital complex's central heating plant. It is 4032 sf in area and stands about 24 feet high. Essentially one large open room designed to house the heating equipment, the infill of a former doorway and a stairway addition are only modest challenges to its integrity.

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Marine Corps Area

Building M60. Built in 1938, Building M60 was originally the second motor pool building for the Marine Barracks. It was converted at a later date to a Public Works Center maintenance shop. It is a woodframe rectangular structure clad with vertically mounted sheets of corrugated metal siding. The gable roof is of the same material. It's dimensions are 30 feet x 90 feet. There are two 8 feet x 8 feet bi-parting sliding doors located on the south, one on the west, and one on the north.

North End

Building 455. A 1929 structure, Building 455 is a storehouse for the Public Works Center. It is a single-story rectangular building with corrugated galvanized siding, the same material that covers the medium-pitch gable roof. It sits upon a raised concrete slab foundation. The area of Building 455 is 31,160 sf. It includes a variety of original wooden windows, most of which are fixed or hopper types.

Building 459. Building 459 is a large, two-story, E-shaped building in the Mission Revival style. It was constructed of reinforced concrete with a stucco finish, on a formed concrete foundation. The roof is hipped, covered in red clay tile. Windows throughout the building are replacement, double-hung aluminum sash. The building retains a few three-light, one panel wooden doors. It features handsome cast stone surrounds at the side entrance and a long arcade at the front entry. The area of Building 459 is 43,279 sf. It was built in 1931 as the Submarine Repair Base Barracks. Between 1936 and 1938, the Works Progress Administration added a courtyard, a mess, bathrooms, and storage areas to the building. Building 459 was intended to house submarine crews and officers awaiting repair of their vessels at the submarine repair base. The building was designed to be self-sufficient, with rooms set aside for a tailor, barber shop, cobbler, and galley and mess decks to provide all necessary services. For several years partially reclaimed dredge ponds surrounded the barracks on two sides.

Building 461. The Navy's first submarines relied on gasoline or diesel engines for surface running and battery power for subsurface operations. In 1932, Building 461 was built at the Submarine Repair Base as a battery repair shop. A large one-story reinforced concrete building, Building 461 was expanded in 1941, 1943, and again in 1956 while continuing the same function attesting to the growing importance of submarines in U.S. naval warfare.

Building 463A. Building 463A was built in 1937 as a water sterilizing plant to support the operations of the battery repair shop (Building 461). It is a one-story rectangular building with stucco walls supported on a concrete pier block foundation.

Building 475. Building 475 was built in 1934 as a concrete mixing plant. This one-story (50 feet tall) rectangular building has an exterior clad in corrugated asbestos. The roof is a high pitch gable covered with corrugated metal. The windows and doors appear to be original.

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Building 485. Building 485 is a U-shaped one-story concrete structure with gable roofs covered with Mission tile. It is in an east-west orientation with its facade looking north to Causeway Street and the sentry house on the north side of Causeway Street. When this office building and the sentry house are viewed together they create the impression of a formal entryway to the island as one exits the Causeway. This Spanish Colonial building features 6/6 double-hung windows with heavy projecting sills. The east wing has an open arcade that shelters its entryway. Square lamps are mounted on wrought iron brackets on the inner corners of the wings and over the central doorway. Typical of buildings in this marshy area of Mare Island, the foundation rests on concrete piers.

Building 487. Built in 1936 as the Motion Picture Exchange, Building 487 is a small (2,642 sf) T-shaped Spanish Colonial Revival building sided with stucco over concrete. The gabled roof covering is Mission tile. The southern leg of the "T" is a 1945 addition built on a former loading dock. The main part of the building rests on a raised concrete foundation. The addition has a flat metal roof covered with asphalt. Its walls are stucco over concrete block. The windows of Building 487 are similar to those in Building 485. Building 487 originally served as the building where ships and other naval activities could draw and return movies for recreational purposes.

Building 489. When built in 1936 Building 489 was designated a receiving warehouse. It is a one-story rectangular building providing some 28,800 sf of storage area. The exterior is clad in corrugated steel siding. The foundation is formed concrete. The roof is a low-pitch gable covered with asphalt and gravel. Both its north and south sides have a four-foot high loading ramp running the entire length of the building. Windows are fixed, banked in pairs in a continuous ribbon around the upper portion of the building. Doors are 12 foot high tongue and groove wood sliding on upper rails and side-hinged two panel wood that maintain the original warehouse appearance.

Landscape Elements

Landscaping at H1 and H72. The principal hospital complex, Building H1 and its major wings from the 1920s. Building H72 and H80/81, include two significant formal landscape areas on the east side of the buildings. The buildings are built into a hillside, facing Cedar Avenue to the west, on the uphill side. To the east -- the location of the referenced landscaped areas -- there exists a substantial open space, leading ultimately to the industrial area east of Railroad Avenue. This formal landscaped area occurs in two locations -- directly behind Building H1 and directly behind H72, the north wing of the complex. The two areas were installed at slightly different period. The landscaped area behind H1 was installed during World War I; the area to the north was installed after Building H72 was constructed during the mid-1920s.

The formal entry area to the east of the original hospital structure consists of a classic approach walk with arch, flag pole, a single palm tree, and bandstand (recently destroyed by a large tree branch falling on it) forming an

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axis line with the front doors. The large lawn is dotted with cannons, missiles, benches, and other historic artifacts. Concrete walks (many in need of repair) lead visitors through the space. The steepness of the slope in the landscape probably never allowed the space to be used for a gathering of any size. Trees of note in this area include a big bunya-bunya tree (*Araucaria Bidwillii*), hawthorn, celtis, monterey pine, atlas cedar, black acacia, and camphor. To the south near the nurses' barracks are chinese elms and large eucalyptus. Planting in the parking lot between the nurse's barracks and hospital wing include ash trees and one incense cedar.

A similar open space is found to the north of the main entry of the original structure, east of Building H72. The grade in this area is somewhat flatter than the entry to H1. An old bandstand which marked the center of the landscape is missing from its foundation. Concrete walks and a bench greet guests. Trees in this area include redwoods, deodar cedars, southern magnolia, and arborvitae (at the bandstand). A grove of aleppo pines is to the north of the open space. North edge plantings consist of oleander, giant redwoods (*Sequoia giganteum*) and deodar cedar. Catalpa trees line the west edge of the old hospital wing and are not very old. Many new landscape improvements have recently been completed at the west edge near the new parking lot.

Archeological Features

Naval Ammunition Depot

F28: Bay Model. The Bay Model was designed by Captain Leonard Cox in 1919 as part of a proposal illustrating the feasibility of maintaining a major shipyard located at Mare Island after World War I. The resource consists of a concrete model on a knoll overlooking San Pablo Bay. The model is constructed of a one-to-three inch layer of concrete trowelled over excavated and sculpted dirt. It measures approximately 25 feet by 25 feet and varies from seven to 17 inches in depth. Site vegetation of seasonal grasses, anise and sage has overgrown the model and footings that supported a viewing platform.

10. BUILDINGS, SITES, STRUCTURES FROM THE PERIOD, 1939-1945

Buildings and Structures

Shipyard North

Building 100A. Originally a small, open lumber storage shed when completed in 1940, Building 100A was enclosed and converted to office spaces in 1943. It has an area of 1100 sf in a rectangular plan. It is sided and roofed in corrugated metal panels. It is mounted on a wooden board foundation. The gabled roof provides overhanging eaves. Two sheltered, wooden porches have been affixed to the north and east sides. Two wooden doors provide access: a double with side hinges and a fixed panel light near the top and a side-hinged single.

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Building 507. Originally a lumber storehouse, as its open northern and southern ends would indicate, Building 507 was completed in 1940 when storage facilities had come to dominate this area. Its structural members comprise steel "I" beams and angle braces. The east and west sides are sheathed in corrugated steel panels as is the medium-gabled roof. The interior features a bridge crane that can travel the full north-south length of the building. The crane's tracks continue on to the north the length of the exterior staging area. Originally a lumber storage facility, it became a boat storage area in 1947 and general storehouse in 1953. It provides just under 28,000 sf of storage area exclusive of the staging/outdoor storage yard.

Building 569. A 13,000 sf office building completed in 1942 as a police station, Building 569 is a two-story rectangular building with four single-story wings affixed to the four corners, two east and two on the west. The ornate entryway with its concrete steps is located on the building's north end. An "eyebrow" style awning marks the entryway between two concrete planters. It is woodframe sided in horizontal redwood boards. The flat roof is covered with asphalt and gravel. Small porches with concrete steps on each side of the building suggest the original appearance was much different with a number of entrances since closed off. Windows are 6/6, double-hung wood sash and are distributed symmetrically around both floors. Doors are single panel with one light near the top. Both round and square steel vents are distributed in an asymmetrical fashion around the building.

Building 607. Building 607 is a single-story rectangular building of corrugated metal siding on a concrete slab foundation. One of the many utilitarian buildings built at Mare Island during World War II, it was completed in 1942. It has always been used as a general storage facility.

Shipyard South

Building 382. Completed in 1941, Building 382 originally functioned as a sub-assembly production shop. Designed by Austin Wilmott Earl, it is a large steelframe curtain wall building, consistent in construction methods and architectural treatment with the adjacent Buildings 386, 388, and 390. This sub-assembly shop reflects a major new technology that had entered shipbuilding since World War I -- electric arc welding. It produced stronger joints, resulting in lighter structures, and required fewer workers than riveting. Welding facilitated the prefabrication of shipyard sub-assemblies. The sub-assembly shop received components from the adjacent shipfitting and welding shops and assembled them into huge pre-fabricated sections that speeded final shipway installation.

Building 670. Another 1939 addition in the vicinity of Drydock #4, Building 670 is a one-story steelframe structure. The exterior begins with a three-foot high concrete base from ground level to the window sills. From there to the roof line, the sheathing is metal. Windows are steel industrial sash. Doors and windows are similar to those of Building 672. The area of Building 670 is 8601 sf.

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Building 672. An example of a World War II-era general shop/storage building, Building 672 was built in 1939 near the quay wall south of Drydock #4. It provides 9400 sf of shop or storage space in a steelframe one-story facility. A three-foot high concrete base exterior is topped at the base of the windows to the roof line with metal siding. Windows are steel industrial sash and are arranged symmetrically around the building. Door types include double side-hinged with six or nine wire glass lights in each top panel and single-swing two-panel steel doors. Metal awnings protect the south-side double doors. A small cylindrical hopper is attached to the southwest corner of the building..

Building 674. A 1939 shop building in the vicinity of Drydock #4, Building 674 is general purpose shop/storage building long used as a tool issue room. It is a one-story steelframe rectangular building with an area of 8601 sf, making it nearly a twin of Building 670. A small corrugated metal shed is attached to the southwest side.

Building 676. Built in 1939 as a pattern shop for the nearby foundry, Building 676 was extended about 165 feet in length to the south in 1941. It was later converted to provide space for storage, space Quality Assurance Office, x-ray vaults, and electrical switchgear facilities. It is a four-story rectangular building. Wall construction is of reinforced concrete on a concrete foundation. Two rectangular stairway towers project eight feet above the roof line on the west side. Two sand hoppers and associated piping are attached to the south end, extending to the third floor in height. Steel roll-up doors distributed asymmetrically around the ground floor provide the necessary vehicle access and continue the appearance of the original storehouse function.

Building 678. Building 678 is a huge multiple-story rectangular building with an area of 107,599 sf. It is a steelframe structure clad in vertical steel panels and corrugated green wire glass and capped by shed style roofs covered with asphalt and gravel. The foundation is formed concrete. The east and west side bays extend to about half the height of the tall main bay. Two large chimneys and two smaller chimneys protrude above the roof line. These and the many ventilators bear witness to the building's beginnings as a foundry. A large bridge crane, running the building's full length on the west side, contributes to the sense of foundry.

Building 680. An imposing industrial steelframe structure, Building 680 houses the Machine Shop. Among the largest buildings at Mare Island, it encompasses an area of 257,000 sf. The central main bay is the equivalent of ten stories in height. It is flanked by two-story elements about one-third its height. The central block is capped with a short extra story with a metal balcony which displays an illuminated sign stating, "Mare Island Naval Shipyard." The facade has a strong composition of solids and voids, horizontals, and verticals and maintains the expression of an enclosing structural skin over a frame. It was built in 1940 on plans from the Bureau of Yards and Docks.

Building 686. A huge World War II-era industrial shop building, Building 686 occupies some 62,300 sf. It is a north-south oriented rectangular building of concrete, steel, and wire glass that contains a tall open center bay surrounded by a mezzanine. A shallow gabled roof mounts the center bay with flat roofs on either side units. All roofs are steel covered with asphalt and gravel. Ground-level additions have been made at various points

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around the perimeter both during and after World War II. Door and window styles vary with function in both the main building and these additions. Building 686 was built in 1941 as the shipyard's electrical shop. It has since functioned as a metallurgy laboratory, welding shop, and welding school.

Building 688. Adjacent to the main shop (Building 680), Building 688 was built in 1941 as the machine department's industrial testing facility for the construction of submarines during and after the World War II. Designed by Austin Wilmott Earl, Building 688 housed equipment and a steam-producing boiler used to test high-pressure diesel, and later nuclear, submarine hull valves sent from the adjacent machine shop before installation on board ship.

Building 702. Building 702 was built in 1941 to store pig metal for foundry use. It is a one-story rectangular building oriented north-south. It is woodframe clad with corrugated metal siding supported on a formed concrete foundation. The roof is shallow gabled and covered by galvanized panels.

Building 720. Built in 1941 as general workshop space and locker areas for waterfront workers, Building 720 is a woodframe, one-story structure clad with galvanized siding and mounted on a concrete slab foundation. The roof is galvanized iron sheet covered with asphalt and gravel. It provides 5980 sf of shop space currently used for joinery.

Building 738. When the preparedness campaign began in 1939, the shipyard's foundry was still located in Building 128 in the old shops area in the Shipyard North. A new foundry (Building 678) was completed in the Shipyard South in October 1940. The foundry operated machinery and equipment to process and cast manganese, bronze, nickel, and zinc metals and produced great quantities of propellers, torpedo tubes, valves, and fittings of all kinds used in ship and submarine construction. The propeller shop (Building 738) followed the foundry to the Shipyard South in 1942. A large building with corrugated metal siding on a concrete slab foundation, Building 738 machined the propeller sections formed at the foundry.

Building 742. Building 742 is one of Mare Island's huge World War II-era shop buildings. It is a rectangular building with an area of nearly 150,000 sf that originally served as an ordnance machine shop when completed in 1942. The building is constructed of reinforced concrete and corrugated steel sheathing supported by steel framing and a formed concrete foundation. The high central bay is topped by a shallow gable roof. The east and west side bays have flat roofs. All roofs are steel panels covered with asphalt and gravel. The windows are steel industrial sash. Subsequent uses of Building 742 include Tool Room and Plant Equipment Maintenance Group shop facilities, submarine battery storehouse, and Ocean Engineering shop spaces.

Building 810. Building 810, built in 1943, is a one-story rectangular building of corrugated metal siding mounted on a formed concrete foundation. Its roof is a shallow gable and its windows are industrial sash. The facade has double-hung aluminum windows. Doors include single or double three-panel wood with four lights or flat wood with one light, side hinged. The area of Building 810 is 3535 sf.

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Drydock #4. Completed in 1942, Drydock #4, was the last permanent concrete drydock constructed at Mare Island. With a length of just 435 feet, a width of 84 feet, and a depth of 20 feet, Drydock #4 is also the smallest drydock in the shipyard. It was designed to accommodate destroyers, submarines, and smaller merchant vessels.

Finger Piers (Piers 21, 22, and 23). The completion of the Finger Piers in 1942 marked a fundamental redesigning of the Shipyard South Area and the culmination of the reclamation of the tule lands started almost 100 years prior. Integrated into the quay wall system, the three 750 foot piers added 7340 feet of berthing space for fitting out ships. In practical terms this meant that by the end of World War II, Mare Island had the capability of berthing and working on 100 ships at one time.

Naval Ammunition Depot

Building 726. The South Fire Station was built in 1941 to provide fire protection to the facilities on the south end of Mare Island, including the magazine facilities, medical facilities, and the shipyard's industrial activities. It is a modest Streamlined Moderne building that remains unaltered.

Building 930. Building 930 was original designated as Building A196. It was built in 1941 to provide guardhouse, housing, and office facilities for the Marine detachment assigned to the Naval Ammunition Depot. It was renumbered when the Marine detachment was moved from Mare Island. Building 930 is a rectangular two-story reinforced concrete building with an area of some 21,000 sf. At each end, wings project beyond the facade of the central building area. The roofs are hipped and covered with composition shingles. A balcony extends along the second-story of the facade between the two symmetrical wings. The windows were replaced in 1981 with aluminum frames in the style of the original wooden framed windows. Access doors to the wings are single steel doors with flat side hinges. Those to the central area are double flat steel doors.

Building 934. A small rectangular office building with an area of 1250 sf, Building 934 is of concrete block construction on a concrete slab foundation. The side gabled roof is of corrugated metal, as are the gable ends above the concrete block. Windows are four x four wooden casements. Large double-hung windows are mounted in the east and west walls.

Building 938. A 1550 sf concrete block rectangle supported by a concrete slab foundation, Building 938 has served as a training facility for the South Fire Station since its 1943 construction. Its side gabled roof is of corrugated steel. A pair of concrete-stepped entryways lead to doors on the east side.

Building A69. Building A69 is a single-story rectangular structure built in 1942 for ordnance storage. Its external walls are clad in vertical steel siding. It sits atop a three-foot high concrete foundation. The south end of the building features a steel-framed canopy that extends over a concrete loading dock which runs the entire length of the building. Building A69 provides 6700 sf of storage area.

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Building A187. Building A187 is one of two remaining World War II-era projectile loading plants. It is a 14,724 sf single-story rectangular building oriented east-west. Its walls are corrugated galvanized siding. The shallow gable roof of the original structure is covered with corrugated asbestos sheets. All of this is supported by a continuous concrete foundation. Six concrete steps lead to a concrete loading ramp affixed to the north wall. The loading ramp is 2/3 of the length of Building A187. Four rectangular, but not uniform, structures have been affixed to the south wall of Building A187. They are clad with corrugated asbestos sheets. The largest has a shallow gable roof, the others have shed roofs. The gable roof is covered with the corrugated asbestos while the shed roofs are sheet steel. Windows vary in size and design including awning windows spaced symmetrically along the east and south walls and industrial sash. The east wall contains a large industrial-style roll-up steel door. Three double-hinged flat steel doors are on the building's north wall. Two single-hinged industrial steel doors are on the south.

Building A215. One of the many ordnance preparation operations carried out on Mare Island was the loading of projectiles with explosives. Just prior to loading, projectiles were steamed out and held in their ready-for-loading condition in Building A215, a single-story rectangular structure of corrugated steel. It is supported on a continuous concrete footing. A three-foot high concrete loading ramp runs the entire length of the eastern elevation. A monitor with nine ventilators runs three-quarters of the length of the shallow gabled roof. At the southeast end of the loading ramp is a shed-roofed main entryway. Large industrial roll-up doors are situated on both sides of the building. It was built in 1943 and provides 22,500 sf of storage space.

Building A248. Building A248, a 20 mm anti-aircraft ammunition filling house, was built in 1942. It is an H-shaped single-story structure of reinforced concrete supported on concrete pier blocks in an east-west orientation. Asbestos shingles cover the shallow gable roof. An elevated concrete loading ramp runs the length of the south wall, and a similar ramp of 100 feet long runs along the north wall. A rectangular addition joins the north wall at the northwest corner and runs along the north wall one quarter of its length. Windows are distributed symmetrically along the east wall, but are installed asymmetrically on the other walls. The windows are either of awning or fixed industrial sash varieties. Door types vary, the largest being an industrial steel roll-up. Building A248 provides 14,673 sf of shop space.

Building A256. A 1280 sf rectangular storage building constructed in 1943, Building A256 has corrugated galvanized walls and roof. The roof is shallow gabled with two round steel ventilators spaced symmetrically along the peak. Windows are with wooden sash and casings. A large tongue and groove wooden door is mounted on the south wall of the building.

Building A258. Building A258 provided 60,000 sf of ordnance storage when it was built in 1943. Side walls are clad in corrugated metal siding as are the three shallow gabled roofs. The north bay is 50 feet shorter than the other two. The building is supported by a concrete slab foundation on concrete pier blocks. There are flat steel industrial sliding doors on all sides of the building. There are several large cutout entrances in the facade.

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Building A259. Building A259 is an 8670 sf, one-story rectangular structure completed in 1943 as a part of Mare Island's mine fabrication and shipping complex. The specific function of this building was mine anchor assembly. The building exterior is poured concrete to near the roof line where concrete blocks cap the walls. The roof is side gabled of corrugated asbestos sheets. Four ventilators are spaced symmetrically along the peak of the roof. A small shed of concrete is attached at the northeast corner. Originally this shed contained a heater and toilet. Both the main building and the appurtenance are supported on concrete pier blocks. Each side has eight double steel doors and one doubled wood door. All double doors feature recessed panels and side hinges. Windows are industrial casements with wire reinforced glass. Railroad tracks paralleled both sides of the building. The railroad system was dismantled throughout the ammunition depot during the 1960s.

Building A265. High explosive "D," selected for distribution to the fleet in 1944, required sifting to remove any foreign material as a final step in preparation for loading into projectiles. This process was carried out in Building A265. It is a two-story, irregularly shaped structure of reinforced concrete and concrete block that conveys the appearance of a number of separate units joined together. This impression is reinforced by the multi-tier appearance of the roof lines. Some sections have flat roofs and others have shallow gable roofs. Building A265 is immediately recognized by the tower that projects ten feet above the roof line at its east end. Windows are as varied in style as the walls and roofs. Two industrial steel sliding doors are mounted in the south wall along with three single doors of two panels and one wooden single door. The north wall contains two single wooden doors each with a fixed window. Built in 1944, Building A265 has an area of 2737 sf.

Building A266. A huge reinforced concrete industrial building located in the northern section of the ammunition depot, Building A266 was built in 1945 as a machine shop. It is a rambling structure designed by Austin Wilmott Earl. The ground floor area totals 71,515 sf in a tall two-story central segment and long one-story wings on either side. The building is flat-roofed and lighted by huge banks of industrial sash. Its most distinctive element is a concrete post and beam external bracing for an overhead crane that runs the length of the two-story element. The bracing can be seen on the east side, facing the water, but the supports extend to the west side as well. The roof is cantilevered out on the east and west sides to shelter the crane supports. A concrete loading dock extends the length of the east side of the building.

Building A271. Building A271 functions as a "vacuum house." Vacuum houses are attached to other, usually larger, buildings by ducting and pipes for the purpose of removing explosive dust entrained in the air of those processing and storage buildings so served. Building A271 is a single-story structure supported on a concrete foundation. The shallow gabled roof is topped by four large round ventilators spaced symmetrically along the peak. There are no windows. Four single steel doors are mounted in the south wall. Along the south wall a three-foot wide walkway separates the building from a massive reinforced concrete retaining wall. Built in 1944, Building A271 is 731 sf. A similar 1948 structure, Building A278 is 360 sf.

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Ammunition Magazines. As the nation prepared for war, the production of ammunition outstripped the capacity of the navy depots to receive and store it. To handle the increasing amounts at Mare Island, additional land was reclaimed along the southwest shoreline of the island during the late 1930s. In 1939 nine additional side-gabled, reinforced concrete high explosive magazines (A178 through A186) were erected on fill at this end of the island. In 1941, three underground, reinforced concrete magazines were constructed in the bluffs at the southwest end of the island (Buildings A204 through A206). The following year 11 more underground magazines and naval ordnance storehouses were laid out at 500-foot intervals along a railroad spur line that circled up south of the old reservoir and terminated west of the 1904 radio receiving station (Buildings A207 through A214, A217 through 219). Six reinforced concrete naval ordnance warehouses (Buildings A220 through A225) were also placed on the north end of the depot near the waterfront. The increasing demand for high explosive storage magazines led to construction of two more buried concrete covered magazines (Buildings A249 and A250) in 1943 in the hillside on Jensen Circle in a remote area reserved for this type of magazine.

Residential-Administrative Area

Building 521. Building 521 is a 77,069 sf, three-story, L-shaped, reinforced concrete office building. Built as an administration center for the shipyard commander, it wraps around Building 47, the historic command center for the base. It was designed by Austin Willmott Earl in 1941 in a restrained Streamlined Moderne design. Its concrete walls are faced in brick to conform with Building 47. In other respects, the building is decidedly a product of the 1940s. It features curved, incised concrete canopies over all major entries. Windows are wide bands of unusual steel double-hung sash, the windows sliding in side tracks, with steel hopper windows below. All of the original windows are in place. The double, glazed steel doors are also original, recessed behind curved concrete surrounds and sheltered by the aforementioned curved canopies. Built on a hillside above the shipyard, the building includes tall concrete retaining walls on its east elevation which appear to be original to the building's design. A major aspect of the administrative complex at Mare Island, Building 521 appears to be almost completely unmodified. A small walkway was built in 1941 to connect it with Building 47 and a large, elevated, enclosed walkway was built in 1941 to connect it to the third floor of Building 229.

Building 563. Building 563 is an offset "L," ten-unit apartment building completed in 1941 to house the families of married petty officers assigned to the Naval Radio Station. Each unit of this two-story structure contains a living room, dining room, kitchen, and laundry area on the first floor and two bedrooms and a bath on the second floor. It is of woodframe construction enclosed with horizontal 1" x 10" rustic cove wood siding. The original wooden sash windows have been replaced with aluminum. Back-to-back privacy entrances on the front share shed-type roofs.

Building 631. The Disbursing Office when completed in 1941, Building 631 is representative of the World War II need for "temporary" structures. It is a two-story woodframe building with horizontal drop board siding and

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a red asphalt shingled gable roof. It rests on a concrete pier foundation and has a north-south orientation. A covered exterior stairway leads from the ground level to the second story along the west side to the northwest corner. The windows all feature wooden casements. All doors are wood and side-hinged. Building 631 occupies 6002 sf. A concrete office addition was constructed on the building's north end following the war.

Building F. Building F is a one-story woodframe house built as an officers' quarters. The rambling structure consists of an L-shape main segment with a secondary wing at the rear. The building has a hip roof and is sided in v-groove horizontal boards. Building F features original 6/6 double-hung wooden sash windows. The building has an area of 3390 sf and appears to be unaltered. Building F originally stood on Walnut Avenue, but moved to Cedar in 1941.

Buildings Q1 through Q20. This row of ten duplexes, built in 1942 as Officers' Quarters is situated west of Officers' Row, facing Cedar Avenue. The buildings are rectangular two-story woodframe structures with low pitched hip roof. The walls are clad in cement plaster to the sill level of the second story and stained redwood horizontal v-groove siding above. This complex was probably designed by a private architect, as was the case with all other World War II-era housing at Mare Island. The residences are products of the diverse architectural traditions in the 1940s: International style in the clean roof lines and window bands; California Ranch style in their horizontality, natural wood finishes, and suburban layout; and military in their uniformity and the fact that they are duplexes.

Buildings OA1 through OA20. This row of buildings was built in 1942 to serve as garages and servants quarters for Buildings Q1 through Q20. They are rectangular two-story woodframe hip roof structures with a one-story lean-to section with a shed roof. The ground floor wall are cement plaster; the second story is v-grooved horizontal redwood siding. Exterior open raiser stairways provide access to second story living spaces.

Bomb Shelters, Air Raid Shelters and First Aid Stations. During World War II, Mare Island built dozens of flat-roofed, thick-walled, window-less concrete buildings designed to protect personnel during an attack by enemy airplanes. Forty of these still exist within the historic district. The buildings are carried by three names -- bomb shelters, air raid shelters, and first aid stations. The buildings are nearly identical within each type. There are 33 bomb shelters, each of which is built within a series of 420 sf shelters, sometimes in groups of two, sometimes in groups of four. The four Air Raid Shelters are structurally nearly identical to the bomb shelter but are somewhat smaller in size. Three first aid stations are structurally similar to the bomb shelters and air raid shelters but are generally larger. The three air raid shelters (ARS-3, 4, 7, and 8) are located in and near the ammunition depot. The three first aid stations (FA1, 3, and 4) are in various locations. The 33 bomb shelters (listed in the table in item 11 below, with the prefix "S") are scattered throughout the historic district, with the greatest concentration in the residential-administrative area, particularly in Alden Park, across the street from the headquarters building. Alden Park today is dominated by the presence of these bomb shelters.

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Hospital

Building 926 and 928. Building 926 is the remaining Single Officers' Quarters (formerly Bachelor Officers' Quarters) on Mare Island. Also known as Wilderman Hall, Building 926 is a two-story stucco finished structure with a Spanish tile hip roof. It is laid out in a "Y" and set against the hillside to its southwest and west. Windows are double hung 6/6 sash. Decorative details include recessed arched doorways, balconies, and Spanish Colonial trim. Building 926 occupies about 7600 sf. Building 928 is the residents' automobile garage. The garage's form and finish is in the style of the main building. Both were built in 1939.

Building H79. Building H79 is a large Mission Revival reinforced concrete barracks building originally constructed in 1939 to provide quarters for single enlisted men assigned to the hospital. It has two stories plus a basement and is laid out in an "H" shape. The main building is oriented northwest-southeast with perpendicular wings at each end. It is supported on a formed concrete foundation. Doorways feature rounded archways on the west facing facade. An attached entry foyer projects eastward from the center of the main building. Its roof is flat. The balance of the building, however, is cross gabled of moderate pitch and continues the Mission Revival motif with Mission tiles. Windows have been replaced with double-hung aluminum frame. The exterior otherwise retains its historic appearance.

Building H80/81. Building H80/81 was built as a south wing to the hospital (H1) in 1941. Essentially mirroring the earlier north wing, H72, this building served as a general ward and administration building.

Building H83. Building H83, a WAVES barracks was built in 1943 to provide on base living quarters for enlisted women who served in the Hospital Corps during World War II. When the WAVES left Mare Island in 1945-46, the barracks stood empty for a few years. Periodically it was reoccupied by WAVES most notably during the Korean conflict. Structurally, it is similar to Building H84 a nurses quarters for regular Navy Nurses assigned to duty at the hospital, constructed adjacent to the WAVES barracks in 1943.

Building H84. Building H84 opened as living quarters for single nurses stationed at the hospital when it was completed in 1943. Unlike the WAVES barracks, the nurses quarters remained occupied until the naval hospital complex was turned over to the Combat System Technical Schools Command in 1962. It is a 9112 sf, two-story rectangle mounted on a poured concrete slab foundation. The building is woodframe construction clad in 4" tongue and groove wood siding. Wooden stairways are located at the building's north and south ends. The west side facade is a two-story covered porch. The porch roof continues the roof line of the main building and is supported by four square wooden columns. The flat roof is covered with asphalt and gravel. Doors are single panel wood and flat steel doors. Windows are casements fitted with security screens.

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Marine Corps Area

Buildings 160 and 160A. Building 160 is a one-story woodframe house with horizontal drop siding and a gable roof covered in composition shingle. It was originally built in 1941 as a two bedroom duplex and served as quarters for civilian personnel working at Mare Island. The building was reconfigured into a single family dwelling, but these changes had little impact to the exterior of the structure. A small garage (Building 106A), also built in 1941, accompanies the house.

Building 733 and 737. In 1944, four buildings were constructed in this area to house a contingent of WAVES. The original compound consisted of two large east to west oriented WAVES Enlisted Barracks (no longer in existence). Two other buildings were constructed between the two barracks and oriented north-south, a WAVES Officers' Quarters (Building 733) and WAVES Subsistence (Building 737). Building 733 is a two-story woodframe structure that is structurally similar to Building H83 and H84. Building 737 at one time probably contained a mess hall, laundry facility, and other such services. Additionally, it was equipped with a boiler that provided the heat and energy for the other three buildings in the compound.

Building 764. Originally the Dental Clinic when opened in 1942, Building 764 is a two-story with basement L-shaped structure of 10,792 sf. It is concrete plastered and rests on a poured concrete foundation. The roof is a moderately pitched cross hip with wood cornice molding below the slightly overhanging eaves. There are ten rounded vent dormers with wood louvers placed on the roof sides. A red brick chimney is located on the northeast roof. Windows have been altered severely since the original construction, but doors and entryways retain their historic appearance.

Building M31. Originally the bakery for the Marine Barracks when finished in 1941, Building M31 has seen service as an armory and a laundry since. It occupies a site near the northwestern corner of its predecessor Building M31, a garage. This is a 1976 sf one-story rectangular concrete structure on a concrete slab. The composition roof is shallow pitched, end gabled with an overhang on the east and west sides. Windows are heavy silled single banks of 12 light steel sash.

North End

Building 376A. Built in 1941, Building 376A is an extension to Building 376. The two buildings are connected by a covered walkway on the south side of building 376A. The two-story rectangular building with drop siding and a concrete slab foundation was built to provide extra housing for enlisted personnel working at the U.S. Naval Low Frequency Radio Transmitting Station.

Building 483. A 1940 five-story Moderne style warehouse and office building, Building 483 is an imposing 400 feet x 180 feet reinforced concrete composition. Two blocks, with molded corners, project horizontally from the facade and vertically one story above the roof line. The windows are banded and the piers between are

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marked with horizontal grooves. Long cantilever canopies shelter delivery areas. A concrete loading dock runs the entire length of the building on the northeast side. Over time Building 483 became increasingly dedicated to administrative functions, but those alterations have not altered the building's character.

Buildings 505, 505A, and 505B. These buildings comprise a radio station complex, built at this site in 1940, on plans dated 1938. Building 505 is the hub of the complex; Buildings 505A and 505B are detached electrical transformers associated with it. Building 505 is a 20,292 sf reinforced concrete building with a flat roof. The plan of the building is a cross, with a three-story core with three one-story wings on the north, south and west. The concrete is decorated in a modest Streamline Moderne styling, highlight by horizontal coping at the parapet and vertical elements on the three-story tower. The building is of interest from the architectural standpoint, as a rare (but not unique) example of Moderne design on the base, and from the historical standpoint, as the best example of the long tradition of radio communication at Mare Island. Mare Island was at the forefront of radio communication but the earliest transmitters no longer exist. Building 505 and its related electrical buildings stand as the key representatives of this aspect of the military history of Mare Island. The three buildings exist at the end of a long driveway, a continuation of I Street. The road ends in a circular perimeter drive, framed by a handsome circle of palm trees. The drive, the three buildings, and the landscaping are included within this historic district.

Building 515. Building 515 is a two-story rectangular building of corrugated steel on a formed concrete foundation. The flat roof is covered with asphalt and gravel. Windows are double-hung and arrayed symmetrically around the circumference of the building. A service shop building for the submarine base when completed in 1941, Building 515 houses Mare Island's tugboat offices and contains the necessary radio and other equipment to dispatch and otherwise direct tug operations. An addition was made to the north and east sides of the building in 1958. The area of Building 515 is 10,121 sf.

Building 531. A single-story, rectangular structure clad with corrugated metal siding, Building 531 is a 1942 vehicle repair shop capable of servicing automobiles, trucks, and heavy equipment. The foundation is concrete slab. The roof is medium gabled and covered with corrugated steel. A corrugated steel awning is cantilevered over the east side of the building. Windows are in groups of three and four. Vehicle entry is provided by industrial steel roll-up doors that have replaced the original ten vehicle doors. Two personnel access doors are mounted in the east wall along with the vehicle doors. The total floor space of Building 531 is 15,314 sf.

Building 535. A one-story E-shaped structure of some 50,000 sf, Building 535 has three distinct types of exterior siding over a wood frame: a stuccoed concrete base wall; horizontal wood siding near the windows; and corrugated steel near the roof line. The roof is a low pitched gable with a slightly overhanging boxed eave. Windows include 8 fixed lights above 8/8 double hung, wood sash. Some areas have been converted to office space. Their respective windows have been replaced with aluminum sliders. The building includes large double

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and single sliding warehouse doors and wooden single and double personnel doors. Two steel stairways lead to the entryways on the east elevation, and one wooden stairway leads to an entryway on the west side. The Utilities Building when completed in 1941, Building 515 has housed Public Works shops and offices.

Building 543. An E-shaped two-story reinforced concrete structure in the Spanish Colonial style, Building 543 was built in 1941 as a barracks building. It features hip roofs in Mission tile. The facade is ornamented with a one story arcade with molded architraves providing the entryways. Windows are 6/6 double-hung sash with projecting heavy concrete sills. Its dimensions are 240 feet frontage by a maximum depth of 173 feet.

Building 545. Across Oak Street from Building 543 is the U-shaped recreation facility known as Rodman Center. It is a two-story structure supported by a five-foot raised concrete foundation. Although its appearance is that of a massive poured concrete edifice, it is, in fact, stucco over plywood over a woodframe. On all three segments the building is framed with tall, rhythmically-placed piers which divide the walls into a series of bays. The U-shape is created by a long central north-south axis with east-west extensions at either end. The northern extension houses the gymnasium, pool, and locker rooms. The southern extension serves as the motion picture theater. The eastern facing facade provides entry to the bowling alley, restaurant, and related athletic facilities. Many of the original 1/1 wooden double-hung sash windows on the second story have been replaced with anodized aluminum sash. A large racquetball court and smaller locker room have been added on each end of the northern wing (gym). Building 545 was constructed in 1942 by Barrett and Hilp of San Francisco. It occupies some 80,000 sf.

Building 559. A large rectangular woodframe structure of about 21,000 sf, Building 559 was erected in 1941 as a metal storage facility. Built on a concrete slab foundation, the exterior is sheathed in galvanized building panels except on the southwest side where 12 foot vertical wood siding is employed. The roof is a low pitched gable with a gabled monitor mounted over the tall central bay. Windows are 1/1 double-hung wood sash. Doors are industrial steel roll-up and single steel with side hinges.

Building 599. A large, one-story rectangular building constructed of steel beams sheathed with asbestos covered corrugated metal siding, Building 599 originally was designated "Metals Storehouse and Gun Shop." It has a shallow gabled roof with a glazed monitor running its entire length. Building 599 was built in 1942.

Building 605. Building 605 is one of the best of several examples on Mare Island of the International Style architecture. It has both one- and two-story sections. Both are of poured in place concrete. A penthouse addition is of wood frame construction. The wall patterns have a v-groove forming squares on some walls and banding others. Doorways are recessed and windows are few and small. This "Telephone Exchange" building was erected in 1942 by Barrett and Hilp.

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Building 637. Building 637 offered over 58,000 sf of vehicle (automobile, truck, forklift, etc.) repair space when completed in 1943. It features a three-story tall central bay situated between two one-story bays. The base exterior walls are reinforced concrete topped by vertical corrugated steel siding. Railroad tracks lead into the high center bay from the east through tall bifold doors. Industrial steel roll-up doors provide access to the service bays. The first level included a large machine shop. The shallow gable roof over the central bay and the shed roofs over the two outer bays feature wide eaves with exposed rafters. The roof contains a variety of ventilators, antennae, and speakers, and a windowed monitor. Window styles vary around all levels, but generally retain the wooden industrial sash of their original construction

Building 657. A 1944 two-story structure, Building 657 was built to house a submarine attack school. It is of reinforced concrete construction on a formed concrete foundation. The flat roof has a wide boxed overhang and is covered with asphalt and gravel. Windows are industrial steel sash, generally awning type. Doors throughout the building are steel, single or double side hinged. The area of Building 657 is 7261 sf. In 1945 an extension was added to the building tripling the original floor area.

Building 689. Building 689 was built to support the Submarine Repair Base as a warehouse for spare parts. The building is a rectangular structure frame with wooden posts and beams and finished on the exterior with horizontal board siding. The building sits on a raised concrete foundation. The central section of the building is taller than the wings; the west wing is about twice the size of the east.

Building 749. In 1944, Building 749 opened as the Fleet Post Office. It is a woodframe building with horizontal board drop siding. It is supported by timber posts and features 1/1 double hung wooden windows. Total floor area is 2706 sf.

Building 757. Formerly the submarine base torpedo storehouse, Building 757 is a square one-story building of concrete and concrete block on a formed concrete foundation. The roof is shed style on either side of a central shallow gabled monitor. Roof surfaces are covered with asphalt and gravel. Doors throughout the building are large corrugated metal sliding doors on rails. Built in 1942, it has an area of 6375 sf.

Landscape Elements

Marine Corps Parade Ground. This is a large open lawn area with older eucalyptus on the west edge, and young locust trees planted on the north edge. The eucalyptus were probably planted as wind breaks. No other landscape items of note. Although the Marine barracks were built at this site earlier, historic maps indicate that this parade ground was not formally established until the World War II era.

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11. CONTRIBUTING RESOURCES

The table below lists contributing resources within the Mare Island Historic District. Three attributes are provided for each resource: Building Number, Date of Construction, and Original Use. The exception concerns resources that do not have building numbers. These include a small number of structures. These also include all identified formal landscape areas. Finally, archaeological features do not carry building numbers. In these instances, the resources are identified by common names.

As discussed under "Methods" and under "Boundary Justification," the boundary for this historic district was determined based upon twin considerations of including virtually all resources associated with the identified areas of significance and built within the identified period of significance. The historic district includes virtually all properties meeting these criteria, excluding only the areas of the base where properties built within the period of significance are far outnumbered by properties built after the period of significance.

With respect to buildings and structures, the table below lists any building or structure that meets three criteria: it exists within the district boundaries; it was built during the period of significance, and it retains integrity. With respect to landscape elements, a property is listed only if it was shown to contribute to the significance of the historic district. Archeological features are those known or predicted to exist within the historic district that are associated with the areas and period of significance.

11. Contributing Resources List

Buildings

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
6	1915	Quarters	
6D	1915	Garage	
6E	1938	Storage	
17	1898	Quarters	
17B	1935	Garage	
17C	1930	Garage	
19	1898	Quarters	
19A	1930	Garage	
21	1898	Quarters	
29	1897	Quarters	
29A	1933	Garage	
29G	1932	Garage	
45	1864	School for apprentices	
46	1856	Smithery	
47	1870	Office building	
47A	1917	Administration and Office Building	
50	1871	Shop	
52	1873	Shop	
56	1895	Bandstand	
65	1901	School for apprentices	
69	1865	Supply warehouse	
71	1858	Storage	
73	1898	Storage	
77	1870	Ordnance storage	
77A	1906	Latrine	
84	1909	Prison	
84A	1939	Warehouse	
85	1858	Foundry	
87	1858	Machine shop	
88	1862	Stable	
89/91	1858	Boiler shop	
98	1898	Timber shed	
99	1900	Fire house	
99A	1905	Fire house garage	
100	1902	Lumber shed	
100A	1940	Shed	

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Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
101	1899	Shop	
102	1902	Lumber shed	
103	1901	Disbursing office	
104	1901	Chapel	
106	1904	Shop	
106A	1918	Boat shop	
108	1911	Storage	
109	1940	Pumphouse	
110	1903	Pumphouse	
111	1902	Storage	
113	1899	Storage	
114	1901	Mill	
115	1901	Electric shop	
116	1905	Shop	
118	1904	Shop	
121	1918	Power plant	
125	1941	Administration building vault	
131	1899	Civilian quarters	
131A	1920	Garage	
133	1899	Quarters	
133B	1930	Garage	
141	1901	Coal shed	
143	1901	Coal shed	
145	1901	Coal shed	
147	1901	Coal shed	
149	1901	Coal shed	
151	1901	Coal shed	
153	1903	Coal shed	
155	1903	Coal shed	
160	1941	Quarters	
160A	1941	Quarters	
163	1903	Coal shed	
164	1906	Shop	
165	1905	Shop	
180	1916	Scrap brass bins	
206	1917	Rodman Annex Recreation Center	
207	1911	Storage	
208	1917	School for apprentices	
213	1917	Storage	

Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
215	1918	Storage	
221	1917	Storage	
223	1917	Storage	
225	1918	Plating & finishing	
227	1918	Storage	
227A	1941	Shop stores warehouse	
229	1918	U.S. Medical Supply Depot	
231	1918	Train maintenance shed	
235	1918	Offices/printing plant	
237	1918	Storage	
239	1918	Storage supply depot	
251	1918	Shop	
253	1918	Supply department	
255	1918	Transformer house	
257	1911	Storage	
259	1911	Storage	
261	1918	Latrine	
271	1918	Shop	
273	1921	Shops	
302	1917	Offices	
334	1918	Offices	
373	1920	Storage	
376	1920	Dispensary/Radio station barracks	
376A	1941	Enlisted quarters	
382	1941	Sub-assembly	
386	1922	Forge shop	
387	1920	Storage/offices	
388	1922	Structural shop	
390	1922	Shipfitting shop	
390A	1942	Women's Latrine	
409	1921	Scrap metal warehouse	
411	1921	Quarters	
417	1922	Medical supply depot	
420	1921	Quarters	
429	1921	Quarters	
429A	1940	Storage	
431	1921	Quarters	
433	1922	U.S. Naval Low Frequency Transmitting Radio Station	
435	1922	Garage/storage	

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Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
455	1929	Storage	
459	1931	Submarine Repair Base Barracks	
461	1932	Battery repair shop	
463	1932	Storage	
463A	1937	Sterilizing plant/impregnating plant/flag painting	
469	1933	Paint storage	
471	1934	Diesel fuel storage	
475	1934	Concrete mixing plant	
483	1940	Storage	
485	1936	Administration	
487	1936	Motion Picture Exchange	
489	1936	Warehouse	
491	1936	Sentry house	
493	1936	Electrical substation	
497	1938	Dispensary	
505	1940	High Frequency Radio Transmitting Building	
505A	1940	Electrical Power building	
505B	1940	Electrical Power building	
507	1939	Lumber storage	
511	1939	Garage/storage	
515	1941	Submarine service building	
516	1943	Electrical substation	
521	1941	Administrative offices	
527	1941	Storage	
529	1942	Motor vehicle storage	
531	1942	Vehicle repair	
535	1941	Public Works shops	
541	1941	Electrical substation	
542	1920	Sawdust storage	
543	1941	Yard Barracks	
545	1942	Rodman Naval Center Recreation Facility	
559	1941	Strip ship material storage	
563	1941	Naval Radio Station support apartments	
569	1942	Police Station	
592	1927	Transformer house	
599	1942	Metals storehouse and gun shop	
603	1942	Latrine	
605	1942	Shipyard's Telephone Exchange	
607	1942	Storage	

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Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
624	1932	Latrine	
631	1941	Disbursing office	
632	1933	Welding material issue station	
634	1932	Lunch/locker room	
637	1943	Transportation repair facility	
657	1944	Submarine Attack Teacher building	
670	1939	Production shop service building	
671	1942	Electrical substation	
672	1939	Production shop service building	
674	1939	Production shop service building	
676	1940	Pattern production	
678	1940	Foundry	
680	1940	Machine and optical shops	
686	1941	Electric shop	
688	1941	Valve testing	
689	1943	Submarine repair base service building	
693	1943	Pumphouse	
702	1941	Pig metal storage	
720	1941	Finger Piers service building	
724	1942	Service support building	
726	1941	Fire station	
728	1941	Electrical distribution	
728A	1943	Storage	
730	1941	Electrical distribution	
732	1941	Electrical distribution	
733	1944	WAVES officer's quarters	
734	1941	Electrical distribution	
736	1941	Electrical distribution	
737	1944	WAVES subsistence	
738	1942	Propeller shop	
742	1942	Ordnance machine shop	
742A	1942	Office	
749	1944	Navy Fleet Post Office	
757	1942	Torpedo storehouse	
761	1944	Rodman Service Center	
764	1942	Dental clinic	
766	1942	Office/latrine	
776	1942	Storage shed	
781	1943	Transformer station	

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Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
782	1943	Electrical distribution	
788	1942	Storage	
789	1942	Electrical distribution	
801	1940	Electric substation	
803	1945	Storage	
804	1943	Wire and fuel testing	
810	1943	Paint and rubber factory	
811	1944	Locomotive cleaning and maintenance	
814	1945	Facilities for cleaning battle damaged machinery	
822	1942	Power station	
828	1942	Power station	
830	1942	Electric substation	
834	1942	Electrical distribution	
845	1944	Diesel oil pumphouse	
854	1926	Pumphouse	
855	1925	Electrical shop	
858	1942	Latrine	
874	1943	Chemical storage area	
898	1938	Electrical distribution	
926	1939	Nurses quarters	
928	1939	Garage	
930	1941	Guardhouse and barracks	
934	1943	Canteen and brig for the Marine Barracks (BLDG A196)	
936	1943	Storage shed	
938	1943	Fire Station training facility	
1278	1926	Storage	
A	1900	Officer's quarters	
A-A	1908	Detached quarters	
A-I	1930	Garage	
A-J	1920	Greenhouse	
A1	1857	Storage	
A2	1906	Shell house	
A3	1858	Shell house	
A4	1858	Shell house	
A5	1890	Shell house	
A6	1874	Shell house	
A8	1903	Magazine	
A11	1895	Gun cotton magazine	
A15	1902	Primer house	

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Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
A16	1895	Filling house	
A17	1905	Ammunition storage	
A20	1870	Magazine	
A25	1911	Office	
A25A	1911	Garage	
A31	1905	Magazine	
A42	1890	Watchman's house	
A43	1908	Quarters	
A43A	1908	Garage	
A44	1874	Watchman's house	
A44A	1919	Garage	
A45	1860	Gunner's house	
A49	1917	Ordnance warehouse	
A54	1914	Ammunition storage	
A58	1930	Quarters	
A58A	1935	Garage	
A65	1917	Ordnance warehouse	
A69	1942	Warehouse	
A72	1918	Warehouse	
A75	1918	Ammunition storage	
A76	1917	Ammunition storage	
A80	1918	Ammunition storage	
A81	1918	Small arms and ammunition storage	
A82	1918	Small arms and ammunition storage	
A83	1918	Small arms and ammunition storage	
A84	1918	Small arms and ammunition storage	
A103	1918	Storage	
A110	1920	Garage	
A121	1943	Small arms magazine	
A130	1921	Warehouse	
A131	1921	Warehouse	
A139	1927	Magazine	
A140	1927	Magazine	
A141	1927	Magazine	
A144	1929	Electrical distribution	
A145	1929	Electrical distribution	
A146	1929	Storage	
A147	1931	Explosives storage	
A148	1931	Explosives storage	

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<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
A149	1931	Shell house	
A150	1931	Explosives storage	
A151	1931	Explosives storage	
A152	1931	Explosives storage	
A153	1931	Seawater pumphouse	
A154	1931	Projectile loading platform	
A156	1932	High explosive ammunition magazine	
A159	1933	Bag charge and filling house	
A161	1934	Explosives storage	
A162	1934	Explosives storage	
A163	1942	Explosives storage	
A164	1934	Explosives storage	
A165	1934	Explosives storage	
A166	1934	Explosives storage	
A167	1934	Magazine	
A168	1934	Magazine	
A169	1934	Explosives storage	
A170	1934	Explosives storage	
A171	1937	Magazine	
A172	1938	Explosives storage	
A173	1938	Explosives storage	
A174	1938	Explosives storage	
A175	1938	Explosives storage	
A176	1937	Magazine	
A178	1939	Explosives storage	
A179	1939	Explosives storage	
A180	1939	Explosives storage	
A181	1939	Explosives storage	
A182	1939	Explosives storage	
A183	1939	Explosives storage	
A184	1939	Explosives storage	
A185	1939	Explosives storage	
A186	1939	Explosives storage	
A187	1939	Loading plant for explosives	
A192	1940	Electrical distribution	
A195	1942	Mine fabrication and shipping complex	
A197	1929	Electrical distribution	
A199	1941	Ordnance warehouse	
A204	1941	Magazine	

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<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
A205	1941	Magazine	
A206	1941	Magazine	
A207	1942	Ammunition magazine	
A208	1942	Ammunition magazine	
A209	1942	Ammunition magazine	
A210	1942	Magazine	
A211	1942	Magazine	
A212	1942	Magazine	
A213	1942	Magazine	
A214	1942	Magazine	
A215	1943	Projectile processing plant	
A217	1942	Ordnance storage	
A218	1942	Ordnance storage	
A219	1942	Ordnance storage	
A220	1942	Ordnance storage	
A221	1942	Ordnance storage	
A222	1942	Ordnance storage	
A223	1942	Ordnance storage	
A224	1942	Ordnance storage	
A225	1942	Ordnance storage	
A227	1943	Electrical distribution	
A248	1942	20 mm filling house	
A249	1943	Ammunition magazine	
A250	1943	Ammunition magazine	
A251	1943	Pump house	
A252	1943	Salt water booster pumphouse	
A256	1943	Ordnance storage	
A258	1943	Inert material storehouse	
A259	1943	Mine fabrication and shipping complex	
A260	1943	Electrical distribution	
A265	1944	High Explosive "D" sifting building	
A266	1945	Joiner and machine shop	
A271	1944	Vacuum system house	
A272	1942	Sentry house	
A279	1942	Sentry house	
A912	1937	Electrical distribution	
ARS-3	1942	Air raid shelter	
ARS-4	1942	Air raid shelter	
ARS-7	1942	Air raid shelter	

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<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
ARS-8	1942	Air raid shelter	
B	1900	Officer's quarters	
B-G	1930	Garage	
BS 2	1942	Bus shelter	
BS 3	1942	Bus shelter	
C	1900	Officer's quarters	
C-A	1908	Quarters	
C-J	1930	Garage	
D	1900	Officer's quarters	
D-G	1943	Garage	
E	1900	Officer's quarters	
E-C	1910	Garage	
E-D	1930	Storage	
E-F	1920	Servants quarters	
F	1941	Officer's quarters	
FA1	1942	First aid station	
FA3	1942	First aid station	
FA4	1942	First aid station	
G	1938	Officer's quarters	
G-B	1934	Garage	
H	1900	Officer's quarters	
H-B	1934	Garage	
H-C	1944	Storage	
H-D	1919	Storage	
H1	1899	Hospital	
H4	1903	Medical officer's quarters	
H5	1903	Medical officer's quarters	
H21	1942	Paint locker	
H34	1918	Storage	
H64	1926	Garage	
H66	1922	Auxiliary pump house	
H70	1926	Hospital ward	
H71	1927	Barracks	
H72	1926	Hospital ward	
H73	1926	Sick officer's quarters	
H74	1928	Central heating plant	
H75	1929	Electrical distribution	
H79	1939	Hospital corpsmen's dormitory	
H80/81	1941	Hospital wards/Administration building	

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<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
H83	1943	WAVES Barracks	
H84	1943	Nurse's quarters	
I-T	1900	Officer's quarters	
J	1900	Officer's quarters	
J-E	1900	Garage	
K	1900	Officer's quarters	
K-E	1915	Quarters	
K-L	1919	Garage	
L	1900	Officer's quarters	
L-F	1920	Garage	
M	1900	Officer's quarters	
M-D	1920	Garage	
M1	1870	Marine Officer's Quarters	
M1A	1938	Servants quarters	
M1C	1938	Garage	
M2	1888	Quarters	
M3	1888	Quarters	
M4	1888	Quarters	
M5	1888	Quarters	
M7	1915	Quarters	
M7A	1915	Garage	
M31	1941	Bakery	
M37	1917	Barracks	
M60	1938	Motor pool	
M63	1910	Motor pool	
M125	1942	Motor pool	
M126	1942	Garage/storage	
N	1900	Officer's quarters	
N-H	1920	Servants quarters/garage	
O	1900	Officer's quarters	
O-B	1935	Servants quarters	
O-F	1900	Garage	
P	1873	Boatswain's house	
P-D	1944	Garage	
Q 01/02	1942	Officer's quarters	
Q 03/04	1942	Officer's quarters	
Q 05/06	1942	Officer's quarters	
Q 07/08	1942	Officer's quarters	
Q 09/10	1942	Officer's quarters	

Mare Island Historic District

Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
Q 11/12	1942	Officer's quarters	
Q 13/14	1942	Officer's quarters	
Q 15/16	1942	Officer's quarters	
Q 17/18	1942	Officer's quarters	
Q 19/20	1942	Officer's quarters	
QA 01/02	1942	Officer's quarters	
QA 03/04	1942	Officer's quarters	
QA 05/06	1942	Officer's quarters	
QA 07/08	1942	Officer's quarters	
QA 09/10	1942	Officer's quarters	
QA 11/12	1942	Officer's quarters	
QA 13/14	1942	Officer's quarters	
QA 15/16	1942	Officer's quarters	
QA 17/18	1942	Officer's quarters	
QA 19/20	1942	Officer's quarters	
R (T)	1898	Officer's quarters	
R-G	1920	Garage	
S	1898	Officer's quarters	
S-B	1935	Garage	
S11-01	1942	Bomb shelter	
S11-04	1942	Bomb shelter	
S22-01	1942	Bomb shelter	
S23-01	1942	Bomb shelter	
S23-02	1942	Bomb shelter	
S24-04	1942	Bomb shelter	
S32-05	1942	Bomb shelter	
S32-06	1942	Bomb shelter	
S33-05	1942	Bomb shelter	
S33-06	1942	Bomb shelter	
S33-07	1942	Bomb shelter	
S33-10	1942	Bomb shelter	
S33-11	1942	Bomb shelter	
S33-12	1942	Bomb shelter	
S33-13	1942	Bomb shelter	
S33-14	1942	Bomb shelter	
S33-15	1942	Bomb shelter	
S33-16	1942	Bomb shelter	
S33-17	1942	Bomb shelter	
S33-18	1942	Bomb shelter	

Mare Island Historic District

Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
S33-19	1942	Bomb shelter	
S33-20	1942	Bomb shelter	
S33-21	1942	Bomb shelter	
S33-22	1942	Bomb shelter	
S33-23	1942	Bomb shelter	
S33-24	1942	Bomb shelter	
S33-25	1942	Bomb shelter	
S33-26	1942	Bomb shelter	
S33-27	1942	Bomb shelter	
S33-28	1942	Bomb shelter	
S33-29	1942	Bomb shelter	
S33-30	1942	Bomb shelter	
S34-02	1942	Bomb shelter	
T-A	1934	Garage	
U	1921	Officer's quarters	
U-B	1924	Garage	
U-D	1920	Servants quarters	

Structures

<u>Facility No.</u>	<u>Date</u>	<u>Original Use</u>
188A	1915	Storage tank
188B	1915	Storage tank
645	1943	Underground fresh water tank
A254	1943	Underground tank
A255	1943	Underground tank
A276	1942	Fire alarm tower
A296	1941	High explosives safe haven
Causeway	1935	Causeway
DD1	1891	Drydock #1
DD2	1910	Drydock #2
DD3	1940	Drydock #3
DD4	1942	Drydock #4
Finger Piers	1942	Piers 21, 22, & 23
FS2	1901	Ferry slip
Pier 34	1941	Berthing pier
Ways 1	1926	Building Ways #1
Ways 2	1916	Building Ways #2

Mare Island Historic District

Contributing Resources List

<u>Facility No.</u>	<u>Date</u>	<u>Original Use</u>
Quay	1924	Quay wall/berths
Reservoir	1873	Ordnance Reservoir
Reservoir	1876	Yard Reservoir/Lake Rodgers

Landscape Features

<u>Name</u>	<u>Date</u>	<u>Type of site</u>	<u>Remarks</u>
AO	1863	Cemetery	
Alden Park	1886	Landscape	
Clubhouse Drive Park	1894	Landscape	
Chapel Park	1901	Landscape	
Farragut Plaza	1890	Landscape	
Hospital Grounds		Landscape	
M1 Landscape		Landscape	
NAD Residences		Landscape	
Officers' Row		Landscape	
Palm trees	1900	Landscape	Along Cedar Avenue
Palm Trees	1940	Landscape	Near Building 505
Parade Ground	1917	Landscape	

Potential Historical Archeological Features (combined features counted as a single contributing historical archeology site).

<u>Feature No.</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
F1	1854	Industrial Area	
F2	1857-1883	First USS <i>Independence</i> Berth	Includes steam engineering complex, original stable area, gun park, cisterns
F3	1856	Marine Railway	
F4	1861-1898	Sawmill	Destroyed in 1898 earthquake
F5	1862	Stable Complex	Located around Building 88
F6	1864-1941	NAD Wharf	
F7	1864	NAD Seawall	Determined eligible by OHP as a contributing element of National Register district
F8	1863	Ordnance Retaining Wall	Determined eligible by OHP as a contributing element of the National Register district
F9	1860	NAD Keeper's House	Building A45
F10	1864-1907	Civil War Battery	
F11	1858-1898	Officer's Housing Area	Original housing destroyed in 1898 earthquake and rebuilt
F12	1883-1914	Second USS <i>Independence</i> Berth	
F13	1869-1906	Hospital Pier/Wharf	

Mare Island Historic District

Contributing Resources List

<u>Feature No.</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
F14	1874	NAD Watchman's House	
F15	1872-1930	Lighthouse Reservation	
F16	1873	Remains associated with Ordnance Reservoir	Remodeled in 1897
F17	1876	Remains associated with Yard Reservoir/Tunnel	Now called Lake Rodgers
F18	1870s	Civilian Housing Area	Known as "Dublin Hill" community
F19	1870s-1940s	Medical Officer's Housing/Hospital Stable Complex	
F20	1874-1940s	Marine Corps Officer's Housing/outbuildings	
F21	1874-1900	Marine Enlisted Men's Barracks/latrines	
F22	1866-1898	Marine Corps area seawall	Now under Farragut Village
F23	1899	Independence quarters	
F24	1900	Hospital Wharf	
F25	1904	Torpedo Boat Wharf	
F26		Bandstand	
F27		Submarine Repair Base	
F28	1923	Bay model	Designed 1919

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12. NON-CONTRIBUTING RESOURCES

The table below lists non-contributing resources within the Mare Island Historic District. Three attributes are provided for each resource: Building Number, Date of Construction, and Original Use. A resource was included on the non-contributing list when it met one of two conditions: it is within the boundaries of the historic district but built after the period of significance; or it is within the boundaries of the historic district, was built during the period of significance, but has been modified to an extent that it no longer retains integrity. The vast majority of resources on this list meet the first condition, i.e., were built after 1945. Twenty-nine properties fall into the latter category.

The degree and nature of modification of the 29 pre-1946 non-contributors differs greatly from one building to the next. In some cases, the building was essentially rebuilt after 1945, with only the pre-1946 foundation existing. In other instances, the building was enlarged to an extent that the new construction dominates the old. In still other cases, the modifications involved a series of relatively small changes -- new windows, new texture, smaller additions -- that cumulatively destroyed integrity for the building. It should be noted that many buildings on Mare Island have been moved from one part of the island to another. The fact that a building was moved was not, in and of itself, treated as a loss of integrity because the building retained a continuity of function within the areas of significance and within the boundaries of the historic district. Not uncommonly, however, the building was modified after it was moved; this modification sometimes formed the basis for a determination of non-contributing status.

The "remarks" field in the table has been used to expand upon the nature of modifications where needed.

12. Non-Contributing Resources List

Buildings

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
58	1978	Rubber shop	
96	1983	Sawdust hopper	
112	1981	Shops/offices	
117	1983	Shops/offices	
120	1981	Asbestos ripout facility	
124	1982	Syntactic foam shop	
126	1980	Pipe shop	
127	1992	Central Fire Station	
130	1970	Office	
132	1983	Ship's spare parts storage	
134	1981	Paint storage	
136	1989	Production shop	
138	1993	Latrine	
140	1983	Work area/offices	
142	1983	Work area/offices	
144	1983	Work area/offices	
146	1985	Air compressor building	
150	1986	Work area/offices	
152	1985	Work area/offices	
201	1985	Dispensary	
289	1920	Torpedo work shop	Major addition, other modifications
330	1985	Rubber press shop	
332	1984	Reactor mock-up training facility	
340	1990	Nuclear work facility	
399/S2	1946	Scale house/Truck scales	
457	1977	Hose maintenance and testing	
473	1955	Flammable fuel storage	
477	1989	Steam cleaning facility	
508	1941	Office	
509	1940	Freight shed	
523	1941	California Coliseum	From 1939 World's Fair on Treasure Island, substantially rebuilt
533	1987	Civilian child care center	
549	1985	Equipment shed	
565	1942	Gas station	
597	1941	Office	New windows, siding, rear addition
602	1991	Paint mixing and storage shed	
604	1992	Offices	

Mare Island Historic District

Non-Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
605A	1992	AT&T CATS facility	
639	1942	Lunch and locker room	Heavily modified
662	1993	CATS repeater facility	
664A	1944	Offices	
669	1942	Latrine	Major additions
684	1982	Shop	
686A	1942	"Women's Toilet"	
690	1942	Galvanizing plant	
692	1941	South Cafeteria	Heavily modified; major additions
722	1942	Quarters	
729	1944	Yard Barracks Annex	
739	1944	Barracks	
744	1974	Shock and vibration test facility	Replacement windows, siding
746	1942	Industrial laboratory	
750	1978	Abrasive blast facility	
762	1942	Service building	
775	1946	Navy electronic warfare equipment training	
795	1946	Reclamation plant for ordnance hydraulic oil	
816	1945	Fleet Facility Bank	Major alterations
826	1942	Power station	
833	1977	Pump station	
835	1948	Paint storage shed	
837	1948	Mason's shed	
839	1978	Chlorination facility	
849	1956	Latrine	
851	1957	Administrative	
853	1957	Work shop/repair center	
859	1959	Sewer pump station	
861	1959	Sewer pump station	
863	1959	Sewer pump station	
865	1959	Sewer pump station	
866	1955	Electronics shop building	
873	1954	Electrical substation	
900	1957	Abrasive blast cleaning facility	
902	1990	Youth center	
913	1964	Garage	
914	1959	Sewer pump station	
916	1959	Sewer pump station	

Mare Island Historic District

Non-Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
918	1959	Sewer pump station	
923	1948	Storage	
927	1944	Baseball field dugout	Rebuilt
929	1944	Baseball field dugout	Rebuilt
931	1944	Equipment storage	Rebuilt
937	1963	Tire storage	
942	1954	Sand hopper	
1003	1983	Child development center	
1056	1965	Officer's quarters (duplex)	
1058	1965	Officer's quarters (duplex)	
1060	1965	Officer's quarters (duplex)	
1062	1965	Officer's quarters (duplex)	
1068	1965	Officer's quarters (duplex)	
1070	1965	Officer's quarters (duplex)	
1072	1965	Officer's quarters (duplex)	
1074	1965	Officer's quarters (duplex)	
1080	1965	Officer's quarters (duplex)	
1082	1965	Officer's quarters (duplex)	
1236	1966	Enlisted quarters	
1238	1966	Enlisted quarters	
1240	1966	Enlisted quarters	
1242	1966	Enlisted quarters	
1274	1935	Shed	
1276	1935	Shed	
1294	1970	Barracks	
1296	1970	Barracks	
1302	1970	Paint mixing and storage	
1304	1969	Paint mixing and storage	
1304A	1993	Office	
1308	1969	Paint mixing and storage	
1310	1972	Sheet metal shop	
1318	1986	Hazardous waste storage	
1320	1973	Office	
1322	1974	Mess Hall	
1326	1984	Work and staging area	
1327	1987	Car wash	
1328	1984	Work facility	
1329	1987	Classified documents shredder	
1330	1985	McDonald's restaurant	

Mare Island Historic District

Non-Contributing Resources List

<u>Bldg. No</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
1331	1987	Crane maintenance facility	
1332	1986	Temporary storage	
1333	1987	Offices	
1334	1988	Changing and field house	
1338	1986	Horizontal blast and paint facility	
1346	1988	Storage	
A71	1907	Ammunition storage	Additions from 1920s and 1950s
A136	1953	Shed	
A142	1929	Shop/electrical distribution	
A155	1930	Equipment maintenance warehouse	
A191	1948	Boiler house	Heavily modified
A194	1952	Smoking area shed	
A216	1942	Medium caliber projectile loading plant	
A228	1948	Offices	
A246	1946	Offices	
A253	1943	Electrical distribution	
A267	1953	Battery charging and truck overhaul building	
A278	1948	Vacuum system house	
A280	1951	Vacuum system house	
A288	1953	Smokeless powder surveillance laboratory	
A292	1953	Scale house/scales	
A295	1993	Pump house	
BS12	1984	Bus shelter	
BS13	1984	Bus shelter	
BS14	1984	Bus shelter	
GS1	1971	Guard station	
GS2	1971	Guard station	
GS3	1971	Guard station	
GS5	1971	Guard station	
GS6	1971	Guard station	
GSA	1971	Guard station	
GSH	1971	Guard station	
H36	1918	Bandstand	
H86	1944	Hospital recreation building	Heavily modified
H89	1945	Navy Hospital Artificial Limb Building	
M2A	1952	Garage	
M3A	1952	Garage	
M4A	1952	Garage	
M5A/B	1952	Garage	

Mare Island Historic District

Non-Contributing Resources List

<u>Bldg. No.</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
M158	1984	Racquetball court	
M169	1988	Rifle range office	
PG511	1985	Salt water pumping building	

Structures

<u>Facility No.</u>	<u>Date</u>	<u>Original Use</u>	<u>Remarks</u>
829	1948	Emergency fuel oil tank	
D-1	1970	150-ton crane	
Pier 35	1953	Ammunition loading berth	Rebuilt at 1941 location
-----	various	Railroad tracks within historic district	Tracks removed of rebuilt

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Section 8

1. SUMMARY STATEMENT OF SIGNIFICANCE

The Mare Island Historic District is significant at the national level, with a period of significance extending from 1854 to 1945. It is significant under National Register criteria A, C, and D in the areas of: military history (Criterion A), relating to its role in defense of the nation during the Civil War, Spanish American War and World Wars I and II; industry (Criterion A), relating to its preeminence among shipyards on the West Coast during nearly the entirety of its period of significance; architecture (Criterion C), relating to its important collection of architectural specimens from many eras; engineering (Criterion C), relating to its inclusion of distinguished examples of structural engineering; and archeology -- historic, non-aboriginal (Criterion D), relating to the known and predicted presence of subsurface deposits that contain information important to our understanding of the history of the Mare Island shipyard, 1854-1920. In addition, the collection of buildings represent a significant and distinguishable entity whose components do not all possess individual distinction (Criterion C). Criteria consideration A is met for the one religious building (Building 104), because it is also distinguished from the architectural standpoint, and for its distinction as the oldest continuously operated Navy church on the West Coast. Criteria consideration D is met for the cemetery (Building A0) because it is significant principally from the historical standpoint, pertaining to its distinction as the oldest Navy cemetery on the West Coast.

1.a. Archeological Predictive Model

In order to assess significance of archeological remains under Criterion D it is necessary to establish a framework for evaluation that outlines site types, potential contributions to ongoing research topics and domains, and data sets required to address the identified domains. A variety of property types are expected to occur at MINSY. Generally, a property type is a grouping of properties that share some important characteristics. Examples include domestic occupation, industrial technology, or defense-related features.

Domestic sites might be represented by hollow features used as receptacles for the by-products of everyday living (discarded ceramics, food bones, glass containers, personal items, etc.) or by sheet refuse. Hollow features include wells, cisterns, subterranean basements or cellars, outhouse pits (also called privy pits or latrines), or lined and reusable garbage pits. These features are often filled as a result of sudden, transitional changes, such as clean up after a natural disaster (fire, earthquake). Sheet refuse is material that accumulates horizontally and can sometimes build up several feet in depth. Often it is composed of material deliberately brought in as fill. The fill layers seal off caches of artifacts and provide evidence of change over time. Analysis of sheet refuse deposits can shed light on backyard use, functional layout of yards, garden designs, and other aspects of daily living.

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Industrial sites usually consist of a series of discrete elements that reflect the technology involved. Each component is a resource type with its own potential. A foundry site, for example, could include coke ovens and fuel storage areas, woodworking shops and wood storage areas, coke furnaces, flask storage areas, iron storage areas, cupola furnaces, casting floors, and machine shops. Each component or element of the foundry contains potential value as a part of the overall process. Taken as a whole, a complete reconstruction of a technological type can be accomplished.¹

Defense sites are also multi-component and could include exterior wall fortification, gun emplacements, magazine storage areas, and watchman living quarters. Each component contributes to the overall interpretation of a feature and allows for a reconstruction of the interaction between different aspects of one feature.

Each property type relates to specific research themes that can be addressed through analysis of materials associated with the resource. Several themes are pertinent to the predicted features that comprise the Mare Island site. These are described below.

Consumer Behavior/Social and Economic Status

The study of individual households and the response of each to economic and social conditions of the time have been under investigation for over a decade. A household, which is defined as a group of people living together for domestic purposes (not necessarily a family), is a convenient unit of study. Self-sufficiency, use of manufactured products, gender issues, and occupational productivity can all be addressed at the household level, and studies of individual households can be combined to examine broader regional patterns.²

Recently, attention has been given to examining individual 19th century households in light of the Victorian attitudes that prevailed at the time. The values touted during the Victorian era were readily adopted by middle-class commercial and professional enterprises. Victorianism filtered down into the artifacts chosen by households, behavior patterns, and specific historical events and processes on many levels, including household decorations, municipal work projects, and children's toys. In contrast, working class consumer practices were

¹ Mary Praetzellis, Adrian Praetzellis, and David Beiling, *Archaeological Research Design and Identification and Testing Strategies* (Sonoma State University, 1993), 243.

² Mary Beaudry, "Archaeology and the Historical Household," *Man in the Northeast* 28(1984): 30; Mary Praetzellis and Andrian Praetzellis, *Historical Archaeology in the Knoxville and Morgan Valley Areas* (Rohnert Park: Anthropological Studies Center, 1985), 94.

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distinctive, perhaps being a way of rebellion or resistance to the overwhelming Victorian values of the middle-class. On military bases, Victorian attitudes could be expected among officers, but may be lacking in civilian working class and enlisted men.³

The archeological deposits associated with mid-19th century households often contain material that provides evidence of the degrees of participation in or rejection of the Victorian patterns of domestic behavior. Artifacts associated with formal dining and socializing can offer evidence regarding the increased importance of these activities through time. The context of the influences of Victorian values on individual households has been developed in other research designs put forth for San Francisco and other urban environments and is applicable to Mare Island as well.⁴

Consumer behavior and social and economic status can be studied through the examination of refuse. Refuse, quite simply, is garbage and includes remains of food preparation and consumption, such as bottles and cans, left overs, seeds, bones, as well as broken and discarded household objects (dishes, personal items, etc.). Refuse deposits associated with specific households can be studied to answer questions about how people lived, what they ate, how they spent their money, where they obtained their products, how (and to what degree) they were influenced by marketing, social movements, or their bosses, what medicines they used, whether women and/or children were living in the house, and a multitude of other questions. Faunal remains, in particular, are crucial in reconstructing diet, economic status, consumer preferences, social status, and in some cases, ethnicity.

At MINSY, household deposits from a variety of social groups are predicted. Comparison of deposits from Naval, Medical, and Marine Corps officers' housing, civilian housing, watchmen and gunners' quarters, and enlisted men's barracks can be crucial in reconstructing the social or economic lifeways of people stationed on the island in the 19th century. The lives of the common sailor or worker are not well documented in the historical record, a factor that enhances the value of remaining archeological features and remains.

Ethnicity/Urban Subcultures

Cultural heritage and gender-related choices can also be examined through material cultural remains. In some studies with a high degree of faunal preservation, distinctions between Irish, African American, and Spanish households have been made based on comparing the faunal record with historical data on food preferences.

³ Adrian Praetzellis, "The Archaeology of a Victorian City: Sacramento, California" (Ph.D diss., University of California, Berkeley, 1991).

⁴ Mary Praetzellis and Adrian Praetzellis, eds., *Tar Flat, Rincon Hills and the Shore of Mission Bay* (California Department of Transportation, 1993).

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Ethnic diversity may be evident in MINSY deposits, particularly in civilian housing areas, and could add to a reconstruction of the lifeways of the island's inhabitants.⁵

Material remains can demonstrate the relative influences of economic distinctions and the development of mass production and world trade of materials. Artifact assemblages found in sealed deposits are literally time capsules, normally created within a short period of time. A study of these capsules results in an understanding of what was purchased and used in a household. These choices are affected by primary age, gender composition, income level, social standing, education, family background, and personal beliefs.

Industrialization/Technology

Currently, the archeological study of industrial technology is in its infancy. George Teague has been studying waste products from industry, such as slag, and has found that the waste can often provide information on undocumented technologies not available through historical research. Henry Unglik and Bruce Council et al. have also examined and analyzed cast iron products and by-products recovered in archeological contexts. Perhaps most pertinent, however, is ongoing analysis and work at the Risdon Ironworks, Industrial Ironworks, and Golden State Miner's Ironworks on Tar Flat, San Francisco, where deposits have allowed for a comparison of technological variation and change, through the analysis of the process of ironworking, rather than the architectural trappings of the factory or shop.⁶

Studying industrial processes associated with shipbuilding, blacksmithing, or other activities could provide data on undocumented technologies or could indicate evidence of local innovations as opposed to use of standardized technology. Extensive reuse of equipment, artifacts, or sites may also be discerned through the archeological record.

Cultural Geography

Archeology offers an ideal means of examining changing land use and spatial organization through time. On a household level, examination of botanical debris is useful in identifying location and composition of backyard gardens. On a wider scale, placement and layout of water system remnants, sewer and drainage systems, and trash disposal areas can be enhanced by combining the historical and archeological records. Archeological

⁵ Mary L. Maniery and Jody Brown, *Historical Overview and Archaeological Research Design for Historical Depot Grounds* (City of Folsom, 1995).

⁶ George Teague, "The Archaeology of Industry in North America" (Ph.D. diss., University of Arizona, 1987); Henry Unglik, "Iron Working at an Early 19th-Century Blacksmith Shop: An Examination of Slag and Iron." Appendix in *A Frontier Fur Trade Blacksmith Shop, 1796-1812*, by John Light and Henry Unglik. (Parks Canada, Ottawa, 1984); Henry Unglik, *Cast Irons from Les Forges du Saint-Maurice, Quebec, A Metallurgical Study* (Parks Canada, Ottawa, Canada, 1990); and Adrian Praetzellis, personal communication with Mary L. Maniery, 1994.

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remains can significantly add to the description and study of the evolving formal and informal landscape and layout of MINSY through time. Identification and study of architectural remains (building foundations, cellars) can be compared to the historical record to complement the study of base design and layout.

Predicted archeological features at MINSY were examined in light of these research themes and expected property types and in terms of their potential data value under Criterion D.

1.b. Organization of the Statement of Significance

In the following discussion, the history of Mare Island is summarized in terms of the five major chronological periods that define the evaluative context for the district: 1854-1865; 1866-1897; 1898-1918; 1919-1938; and 1939-1945. Following each historical summary, there is a discussion of how the district is significant in terms of that period in the areas of military, industrial, architectural, engineering, and historic archeology. It will be observed that significance in engineering and architecture are discussed together. The vast majority of buildings at Mare Island were designed by engineers, many during the 19th century when the lines between the allied professions were blurred. The section closes with a discussion of how "exceptional significance" was considered but dismissed for this historic district.

2. 1854-1865 -- Founding of the Navy Base through the Civil War

The founding of Mare Island Naval Shipyard may be traced to the exigencies of military occupation of California after the cession of the area from Mexico in the 1848 Treaty of Guadalupe Hidalgo, and the closely-related need to preserve civil peace during the chaotic Gold Rush years in California. California, admitted to the Union in 1850, was slow to develop institutions to manage the huge task of the transfer from Mexican authority and the burgeoning population associated with the Gold Rush. The United States military represented an important stabilizing impact on the civil institutions of California during this period.

The Army in particular established many small installations throughout California during the 1850s, a few of which remain. The Navy, however, established but one base on the West Coast during this period -- Mare Island. The first West Coast naval installation, Mare Island was also the only such facility in California for many years. Because it was such a pioneering facility, Mare Island owns a long string of other "firsts" in California and Western American naval history. These various distinctions are highlighted throughout this narrative.

In 1818, the USS *Macedonian* sailed for the Pacific with the express duty of protecting American commercial interests on that ocean. She was the first American warship in those waters assigned the specific mission of commerce protection; as such her sailing marked the founding of the United States Navy's Pacific Station. Early in the 19th century, the Navy adopted a policy of dispersing warships to distant cruising stations to protect American shipping. Attacks from Barbary Coast pirates prompted the establishment of the first distant station

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shortly after the War of 1812. The Pacific Station was the second, followed by several others.⁷ Within a decade following the cruise of the *Macedonian*, the range of the Pacific Station had greatly expanded as American commercial interests flourished. By 1835, the Pacific Station consisted of the Pacific Squadron of four ships.

Although equipped for three-year voyages, the ships of the Pacific Squadron suffered from a lack of a permanent base on the West Coast. At that time the only coastal area owned by the United States was near the Columbia River, an area completely undeveloped and lacking the manufactured supplies required by the Squadron.

After the Mexican War, the now fourteen-vessel-strong Pacific Squadron remained the most obvious representative of U.S. strength in California. As such, the Navy was an important participant in the Gold Rush. Conversely, the Gold Rush had a significant impact on the Navy. With the signing of the Treaty of Guadalupe Hidalgo the Navy was left with the task of defending a nation with two sea frontiers some 2500 miles apart by land but 14,000 miles apart by sea. The maritime commerce and trade spurred by the Gold Rush and the growth of San Francisco demonstrated the importance of the new sea frontier in the Pacific. The task of protecting California's shores and the ships that sailed to and from her various ports led to expansion of the Pacific Squadron.⁸ Yet, by the late 1840s the Navy was still lacking a permanent base and naval shipyard on the West Coast. Older ships and vessels in poor repair could not make the trip around Cape Horn without considerable risk and had to be left in California. New vessels took up to a year to reach the Pacific Station from eastern seaboard Navy yards. The need for a permanent shipyard was recognized as early as 1848.⁹

The initial interest in a West Coast naval base concerned the need for a safe haven in the region both for repairing and refitting ships cruising in the Pacific and also for "recruiting of the health and strength or numbers of their crew." Additionally, a permanent base in the west would free the Navy from dependence on private establishments for the building and repair of public vessels in the region. It was also argued that in times of war a permanent naval base with the means to construct and outfit warships was necessary for the protection of American commercial interests in the Pacific. The San Francisco Bay was long held to be the ideal location for such a base.¹⁰ In 1852, Secretary of the Navy William A. Graham commissioned a board of naval officers to survey San Francisco Bay for a protected site for a Navy yard and to plan the best locations for drydocks, piers, wharves, shops, storehouses, offices, a hospital, and residences once they found a suitable location. In July the board, led by Commodore John Drake Sloat and composed of Commander William S. Ogden, Lieutenant Simon F. Blunt, and Bureau of Yards and Docks Engineer William P. S. Sanger, notified Secretary Graham that they

⁷ Robert E. Johnson, *Thence Round Cape Horn* (Annapolis: United States Naval Institute, 1963), 1, 7.

⁸ James P. Delgado, *To California By Sea* (Columbia, South Carolina: University of South Carolina Press, 1990), 123.

⁹ Delgado, *To California By Sea*, 129.

¹⁰ Senate Committee on Naval Affairs, *Report to Accompany Bill S. 15*, 32d Cong., 1st sess., 1852, Senate Report 14.

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considered Mare Island to be the most suitable location. In August of that same year, a sectional floating drydock, authorized by the Secretary of the Navy for use in California, arrived at San Francisco. The drydock, built in New York and shipped in pieces around Cape Horn, remained the dominant feature at the Mare Island shipyard until past 1855. In 1853, on the recommendation of the Board of Officers, U.S. government bought the island for \$83,491 and the drydock was moved into place in the Mare Island Strait.¹¹

Based on observations at the site, William P. S. Sanger conceived the original plan for the Navy Yard at Mare Island. These drawings were then formalized by planners in the Navy Bureau of Yards and Docks. Born in Massachusetts in 1810, Sanger had a long and illustrious career with the Navy Department as both a civilian and an officer. One of his first assignments was as "Resident Engineer" during the construction of the U.S. Navy's first drydock at Norfolk in 1831. After the formation of the Navy's Bureau of Yards and Docks in 1842, Sanger served for many years as its only civil engineer. As the value of Sanger's accomplishments and contributions to the Navy became obvious, many other civil engineers were employed at Navy yards under his direction. In 1867, Sanger became the first officer commissioned into the Navy's new Civil Engineering Corps. He retired in 1882 at age seventy-two with the rank of Captain and died eight years later.¹²

The Sanger Plan for the Mare Island shipyard covered the relatively level plateau at the north end of the island (now the center of the island). The plan called for a wharf a mile in length along the Mare Island Strait at a point where the depth of water at mean low tide was approximately 25 feet. Sanger planned the yard level at the quay line at ten feet and planned to use excess dirt from the uplands as fill. The fill would range from 200 to 1000 feet. A 100-foot wide quay was to extend the length of the wharf, interrupted in the center by a permanent drydock flanked by building ways with ship houses and a wet basin for an existing floating drydock. Although Sanger appreciated the utility of the floating drydock for making slight repairs, he believed it unsafe for extensive repairs unless firmly grounded in a shallow, protected basin.¹³ To the north of the central permanent drydock the Sanger Plan designated an area for 300-foot long timber sheds. These sheds were to include spaces for the molding lofts, house joiners, and paint shops. Next to the shed Sanger proposed several warehouses for ships stores. Further north, separated by a 500-foot wide gun shot and anchor park, was the site for a machine shop with foundry and boiler room. To the south of the drydock, Sanger planned three large shop buildings, with work area over storage space, for mast production and repair. Further south, beyond the warehouses, was the large wet basin with eight drydocks.¹⁴

¹¹ Lott, *A Long Line of Ships*, 8-9

¹² Kenneth Cardwell, *Historical Survey of Mare Island Naval Complex, Final Report* (Berkeley: Mighetto and Youngmeister, 1985), 31.

¹³ Secretary of the Navy, *Annual Report, 1854*, 398.

¹⁴ Cardwell *Historical Survey*, 31; Plan for a Navy Yard at Mare Island, California, 1854.

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West of the main shipyard buildings and separated by a 100-foot wide street, Sanger's plan called for a second row of buildings. These were to include: stables and cart yard; a bakery; flour storage; a cooperage; an administrative building with library and courtrooms; the smithery flanked by copper, tin, and plumbers' shops; the powerhouse for the marine railway; storehouses for timber, rigging, sails, and oakum; and shops for ship joiners. Backing the shipyard was another 10-foot wide street, three blocks of unassigned space, each 300 by 900 feet. Next were three blocks for residential buildings. The middle block of the residential quarter was to contain the Commandant's residence, flanked on either side by houses for the Chaplain, Surgeon, and Purser. Lieutenants, Sailing Masters, the Naval Constructor, the Civil Engineer, the Steam Engineer, the Storekeeper, Carpenter, Boatswain, Sailmaker, and Clerks were to occupy houses on the blocks to the north and south. The flagstaff was located in the central park space, opposite the Commandant's residence. At the southernmost end of the residential block, a chapel and schoolhouse were to be erected. Sanger designated the area behind the residential area as a 1500-foot rope walk with hemp storage. A tract of about 600 feet by 700 feet located about 250 yards southwest of the residential zone was reserved for a hospital. A similar sized district was also reserved for a Marine compound.¹⁵

The original plan for Mare Island centered around five north-south axes: the wharf or quay wall; California Avenue; Railroad Avenue; Walnut Avenue; and Cedar Avenue. The first four streets provided access to the various locations within the shipyard area while Cedar Avenue served as the primary approach to the Marine Corp and Hospital areas. Although there were several roads extending to the southern tip of the island, these were either poor and muddy much of the year or else wound around over the high bluffs located at that end of the island. Consequently, during the early periods access to the Ammunition Depot was gained primarily by boat. Mare Island's first commandant, Commander David Glasgow Farragut, added to the plan the island's principal east-west axis, Central Avenue. This street extended from the ferry slip on the wharf past the central administration offices (Building 47) to the Commandant's Quarters. For most of the 19th century, Central Avenue provided the principal point of entry into Mare Island Navy Yard.¹⁶

The manner in which the buildings are grouped in the Sanger Plan is consistent with the administrative order of the Department of the Navy at the time. When it was initially established, the Secretary of the Navy directed all of the departmental and service activities with the assistance of a handful of clerks. This system, however, proved unsuccessful during the War of 1812 and was replaced in 1815 with an arrangement of the secretary and three senior captains acting as the Board of Naval Commissioners. In 1842, the department was reorganized along bureau lines with carefully delineated responsibilities. The Bureau of Yards and Docks supervised naval installations and was responsible for all buildings, machinery, and so forth; supplies such as sails, cordage, fuel, and such were handled by the Bureau of Equipment; the Bureau of Ordnance was responsible for ordnance and ordnance stores; the Bureau of Construction and Repair oversaw the building and repairing of Navy vessels;

¹⁵ Lott, *A Long Line of Ships*, 24; Plan for a Navy Yard at Mare Island, 1854.

¹⁶ Plan of US Naval Yard, Mare Island 1862, 1874, 1898; Lott, *A Long Line of Ships*, 24.

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charts, chronometers, barometers, and the like were the responsibility of the Bureau of Hydrography; the health of personnel was ensured by the Bureau of Medicine and Surgery; and the Bureau of Provisions and Clothing took care of those needs.¹⁷ Consequently, the buildings at Mare Island were initially grouped according to the bureau that oversaw their function. Within the shipyard area those shops that dealt directly with ship construction tended to be clustered around the drydocks and building ways, while those which dealt with manufacturing equipment were grouped at the northernmost end of the yard. The Bureau of Ordnance originally administered two groups of shops, one for manufacturing guns and shells in the shipyard and one for storing explosives at the south end of the island. Personnel from the Bureau of Surgery and Medicine oversaw the original dispensary and then later the hospital.

Although the Sanger Plan for Mare Island was essentially sound and was for the most part implemented, it did have several functional disadvantages. The essential defect of the plan lay in the fact that the station was located on an island. This meant that all raw materials and daily supplies had to be delivered and processed dockside and then distributed to ships which were also dockside. Furthermore, most yard workers arrived and departed the station each day by ferry. The barges and ships and ferries that daily cruised between the mainland and the island created considerable, and sometimes dangerous, cross traffic patterns. The plan would later suffer from changes in ship building practices which occurred in the last half of the 19th century. For example, had the massive wet basin with eight drydocks been built, it would have soon been made obsolete by the size of ships coming into Mare Island for repairs.¹⁸

In August 1854, the Secretary of the Navy assigned Commander David Glasgow Farragut to Mare Island as the station's first commandant. Upon his arrival on September 16, 1854, Farragut observed additional problems with the plans for the naval yard, chiefly with the arrangement of the buildings. In several cases Bureau of Yards and Docks planners ignored the topography of the island and located buildings with one end on level ground near the waters edge and the opposite end extended into the hillside far enough to require the removal of 20 to 30 feet of soil to bring the foundation to grade. The original yard plan also placed the shops and storehouses around the building way; Farragut felt that this was in error and that they would be better relocated around the planned wet basin. Additionally, the Bureau of Yards and Docks rendering of the plans had many buildings drawn wildly out of scale. Making some minor modifications in the Sanger Plan, including the creation of Central Avenue as described above, Farragut and his Superintendent of Yards and Docks, Daniel Turner, set about construction of the Smithery, Steam Engineering complex, and storehouses.¹⁹

¹⁷ K. Jack Bauer, ed., *The New American State Papers, Naval Affairs*, v. 6, *Administration* (Wilmington, Delaware: Scholarly Resources, Inc., 1990), 47-49.

¹⁸ Cardwell, *Historic Survey*, 32; Lott, *A Long Line of Ships*, 24.

¹⁹ Lott, *A Long Line of Ships*, 24.

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In 1854, the Chief of the Bureau of Yards and Docks appointed Daniel Turner as the Civil Engineer for the Navy Yard at Mare Island. Born in 1796, Turner received his primary training in civil engineering while attending West Point. During the War of 1812, he was appointed Acting Assistant Engineer for the purpose of erecting the temporary defenses of New York City. After the war, Turner returned to his home state of North Carolina where he served in the state legislature and later as a member of the U.S. House of Representatives. He served as Civil Engineer at Mare Island from 1854 until 1860. During his tenure at Mare Island he oversaw the construction of the early buildings and facilities at the station. Of these early buildings, six which are associated with Turner, are still standing. These structures are: Building 46, the smithery built in 1856; Building 71, a storage building built in 1858; Building 85, the foundry built in 1858; Building 87, a machine shop built in 1858; Building 89/91, the boiler shop built in 1858; and Building A1, the magazine, built in 1857.²⁰ Although Farragut and Turner made some minor modifications to the plan of the naval yard, they essentially remained true to Sanger's original vision for Mare Island. The first major break from the plan would not come until 1874 when Civil Engineer Calvin Brown implemented his design for the stone drydock.

With the advent of the Civil War, the Pacific Squadron's most important duty turned to protecting the California gold shipments carried by mail steamers to Panama. Not only was the gold bullion needed by the Union, but the capture of a single gold steamer would greatly strengthen the foreign credit of the Confederacy. By July 1861, with only six ships, the Pacific Station was the only one of the U.S. distant stations which still maintained a squadron. To enforce the blockade of the Confederacy, all U.S. warships had been recalled from both the East India and Mediterranean stations, while the Brazil and Africa stations were left with one vessel each. By late summer the Pacific Squadron was reduced to half its force due to damage to three ships. The situation might have been critical had it not been for the Mare Island Navy Yard. The presence of the base meant that the ships of the Pacific Squadron were able to be thoroughly overhauled and repaired without leaving the station. Moreover, Mare Island's magazine was stocked well enough that none of the warships was forced to borrow gunpowder or shot from a foreign government or private company as they had to in previous years.²¹

In 1862, in response to a request by Pacific Squadron Commander Flag Officer Charles Bell, Secretary of the Navy Gideon Welles assigned a contingent of 140 Marines to guard Mare Island Navy Yard. Captured and released by the Confederacy while in the Caribbean, the Marines arrived at Mare Island in 1863.²²

²⁰ Cardwell, *Historic Survey*, 33.

²¹ Johnson, *Thence Round Cape Horn*, 114.

²² Lott, *A Long Line of Ships*, 76; Letter 3 Aug 1863, MINSY Commandants Office, Letters Received from the Bureau of Yards and Docks, RG 181, National Archives, San Bruno, California.

United States Department of the Interior
National Park Service

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2.a. Significance in Military History

The Mare Island Historic District is significant in the area of military history during the years 1854 through 1865 primarily because of its distinction of being the first permanent naval base on the West Coast. The base was key to the establishment of an American military naval presence on the West Coast, particularly in its exclusive role in servicing the Pacific Squadron. In addition, the base served a vital stabilizing influence with regard to commercial navigation, a role that was indirectly but importantly associated with the task of establishing military supremacy in the region. Finally, the base served as the first permanent naval ammunition depot on the West Coast, a key prerequisite for establishing naval supremacy. It is on the basis of this military role, coupled with the rare and distinguished examples of 19th century industrial architecture, that the Mare Island Historic District is of national significance.

2.b. Significance in Industrial History

The Mare Island Historic District is significant in the area of industrial history because it was at the heart of the West Coast ship repair apparatus during this crucial period in shipping in the region, at the advent of American maritime use of the area. Mare Island is literally the birthplace of ship repair in California and the West Coast, introducing to the area an industry that would survive through the end of World War II. The historic district retains a large collection of masonry industrial buildings that were integral parts of that pioneering effort, buildings that embody this crucial industrial development and which indicate in their forms the processes that were used in the various shops.

2.c. Significance in Engineering and Architecture

The buildings from this period are significant in the fields of architecture and engineering on three bases. First, the buildings from this period are highly significant as rare examples of pre-1866 brick industrial buildings. Rarely in California or elsewhere in the United States can one encounter a group of industrial buildings of such antiquity and relative integrity in such a confined area. Second, the buildings reflect the stylistic preferences of the era, particularly the commitment to Classical Revival design in Federal architecture. Third, the buildings illustrate the range of structural systems available to 19th century builders of large industrial spaces.

Twelve buildings remain at Mare Island from this very early period of construction, seven in the Shipyard North and five in the Ammunition Depot area. (Another property in the Ammunition Depot is the base cemetery, established in 1856.) These buildings are excellent examples of the building technologies and architectural styles of the period and may be distinguished easily from all other periods, except those of the 1866-1897 era, which continued the architectural traditions of this pioneering era. The extant shipyard buildings at Mare Island are exceedingly rare examples of their type, period, and method of construction and form the core group of historic buildings at Mare Island. In terms of building technologies, virtually all shipyard buildings from this period are constructed of massive brick walls with arched openings for windows or doors. In this respect, the buildings

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are typical of warehouse design from the period.²³ The arched openings are decorative to the extent they are consistent with the Classical Revival design but they are functional as well, representing the best available means of achieving large spans in unreinforced masonry construction. Wood posts, beams, girders, and truss supported the roof and interior of these buildings. In terms of architectural style, the buildings are all designed in some variation on the Classical Revival vocabulary, preferred for all types of Federal construction during the period.²⁴ The elements of this style -- denticulated cornices, broken pediments, sandstone ornamentation, and so forth -- are easily adapted to construction in masonry; they were, in fact, developed for execution in masonry. These elements are not at all structural and can be explained only in terms of the stylistic preferences of the period and the long neo-classical tradition in Federal architecture.

Many of the buildings at the base from this period were designed by Daniel Turner. Eight buildings remain from Turner's early work at the island. His structures are quintessential 19th century industrial buildings -- heavy masonry construction in a restrained revival style. Building 46, built in 1856, is a huge brick building with Romanesque arches. Building 71 is a heavily-modified Turner building from 1858. Building 85 is a large brick building with Classical Revival gable returns and denticulated cornice. Turner was also likely responsible for designing Buildings 87 and 89/91, 1858 brick buildings with detailing similar to that of Building 85. Turner's buildings epitomized the early period of Mare Island history, 1854-1865. His buildings were: executed in masonry, usually brick; heavy and broad, reflecting their masonry materials; and detailed in classical details, reflecting the continuing influence of the Classical Revival in the design of all modes of Federal architecture.²⁵

Ammunition Depot buildings from this period are of stone or brick, with only very small openings owing to the fact that most are ordnance magazines. Again, the use of masonry construction was typical for the period. Three historic magazines exist from the earliest occupation of Mare Island. These are Buildings A1, built in 1857, and A3 and A4, both constructed in 1858. A1 is a sandstone building with metal roof truss. Its distinctive quoins at the corners and wreathed eagle ornamentation at the doorway make this one of the more handsome pre-Civil War stone buildings in California, despite damage it suffered in a 1901 explosion. Building A3 and A4 are in brick with timber trusses. Although plain by comparison with A1, the brick work is as handsome as any found

²³ Carl W. Condit, *American Building Art: The Nineteenth Century* (New York: Oxford University Press, 1960; Kenneth Cardwell, "Historical Survey of Mare Island Naval Complex, Final Report," Revised Final Report, 6-3-85.

²⁴ The importance of the Classical Revival and the Greek Revival in particular in Federal architecture is discussed most comprehensively in Lois A. Craig, et al, *The Federal Presence: Architecture, Politics, and National Design* Cambridge: The MIT Press, 1984 (reissue of 1978 publication).

²⁵ Craig, 1984. Craig deals little with military construction but observes that War Department construction followed the general trends of Federal architecture. The evolution of a War Department "style," at least as it affected Army residential buildings, is traced in Bethany Grashof, "A Study of United States Army Family Housing, Standardized Plans, 1866-1940," Atlanta: Georgia Institute of Technology, 1986.

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in the Shipyard area. The third pre-Civil War building in this area is A45, a wood frame residence built here in 1860. It is the oldest residence and oldest timber building on the base.

2.d. Significance in Archeology

Features that are associated with early development of MINSY might yield data useful in addressing research issues discussed above. Industrial remains associated with the steam engineering complex (F1) and sawmill (F4) could be used to identify discrete functional work areas and technological changes. The details of shipyard operations for this early period are not gleaned from the historic record but can be interpreted through a study of archeological remains. Blacksmith efforts and domestic refuse associated with the stable complex (F5) might also provide important information to fill in gaps in this earliest period of Mare Island history.

The marine railway and engine house (F3), although partially obliterated, are important as examples of shipyard operations and as the first marine railway built at a naval yard in the west. A similar railway was present at the Risdon Iron Works in San Francisco in the 1860s, but it no longer exists.²⁶

The 1850s and early 1860s was a period of development at MINSY. Quay walls in the shipyard area were constructed of granite and served as ship berths. One of these walls (F4) was used as the first berth of the receiving ship USS *Independence* from about 1857 to 1883. Refuse disposed over the side of the ship or off the edge of the berth could provide data useful in reconstructing the function of the ship and daily activities of the men who lived on the vessel. A sea wall (F7), built of sandstone in 1864, was designed to minimize wave action and erosion and protect the magazine from flooding. Now buried under fill, this wall is remarkably intact and provides data on seawall construction methods and base design and layout.²⁷

A brick retaining wall (F8) built around the ordnance area also exhibits high integrity and is a good example of masonry construction from MINSY's early period. The seawall and retaining wall have been determined eligible under Criterion C by the State Office of Historic Preservation.

Built in 1864, the original NAD pier (F6) and wharf provided a landing for loading ordnance onto the ships and for unloading ammunition and supplies. For many years it served as the only access into the NAD. Remnants of the pier might be preserved under fill and could contribute to understanding early construction and functional layout and design. Artifacts, tools, and other deposits discarded over the sides of the wharf may also be present.

²⁶ Praetzellis and Praetzellis, eds., *Tar Flat*, 318-330.

²⁷ Lemmon and Wichels, *Sidewheelers*, 3; Edwin C. Bears, *Historic Structure Report, Fort Point Historic Data Section* (Denver: National Park Service, 1973); Department of the Navy, *Seawalls, Bulkheads and Quaywalls*, Design Manual 25.4 (Alexandria, VA: Department of the Navy, Naval Facilities Engineering Command, 1981), 25.4-2 to 25.4-3; Shipyard Logbook 1861.

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Deposits associated with the domestic features of the Keeper's house (F9) might yield information regarding the social organization, economic status, and possible ethnic affiliation of this civilian residence. These deposits, when compared to similar deposits from officers' housing or Dublin Hill, could shed light on social and economic lifeways on base.

Three Civil War defense fortifications were built at MINSY in the 1860s. The two on Dublin Hill were destroyed in later years. The crescent-shaped earthworks (F10) at the south end of the island remained intact until 1907. Remnants today include part of the brick-supported earth wall, brick walkways that led to the main NAD magazines, and a brick magazine. These earthworks were unique for the Navy in that they were designed with assistance from U.S. Army Corps of Engineers (USACE) in a typical Army design. In addition, the defense system represents the only surviving Civil War earthworks at a Navy yard in the west. Although 50 percent of the structure has been destroyed, the remaining portions provide valuable data in layout and construction techniques.²⁸

The residential area (F11) set aside for officers was developed beginning in 1858. Work orders indicate that these early brick structures had basements, outhouses, livestock holding pens or stables, sheds, or gardens. Deposits from this domestic occupation area would be extremely important in examining dietary habits of officers households, social and economic lifeways of people stationed on base, functional layout and landscaping, and Victorianism on what began as a frontier setting. Comparison of deposits with others from the Marine Corps area, civilian housing, and NAD watchman cottages could also provide information on social and economic conditions at MINSY that would not be available in the written record.

Although not assigned a number, deposits associated with residences of squatters and early non-military use of MINSY might also be present in the Shipyard North and other subareas on base. Several locations of the Hanscomb-Secur and Squatter Turner houses are generally reported. The Hanscomb-Secur house was rented by Farragut upon his arrival to the island and served as an administrative center for a time. Deposits associated with these residences could yield data relating to social and economic lifeways of the inhabitants.

3. 1866-1897 -- Civil War to the Spanish-American War

After the Civil War the U.S. Navy lapsed into a period of decline that lasted nearly two decades. At war's end, the Navy of over 700 ships, including 65 ironclads, mounting over 5000 guns, was one of the strongest in the world. Yet by the mid-1870s, the government had auctioned off or scrapped more than two-thirds of this force. For the most part the fleet of monitors was allowed to rot away; those slated for reconstruction, in some cases, sat for almost 20 years before repairs were completed. By 1880, the Navy had only 48 ships left capable of

²⁸ Brown and Maniery, *Historical Depot*, 62-67.

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firing a shot. In naval strength the United States stood 12th in the world, behind such countries as Denmark, China, and Chile.²⁹ The reason for the decline during this period was, aside from the typical post-war reduction of force, a new national focus on internal growth which in turn led to a decline in the American merchant marine. Transcontinental railroads opened up the western resources for use. Industries rose to meet the increased demands for goods and services. Between 1860 and 1890 the population of the United States doubled, industry produced five times the manufactured goods, and the nation rose from the fourth to the second largest exporter in the world. In the face of this growth, American capital found it much less expensive to ship goods in foreign vessels than to compete with the more advanced British iron ship construction and operation. In the Pacific, the American whaling industry had been all but ruined during the latter days of the Civil War when the Confederate raider *CSS Shenandoah* burned whaleships in the North Pacific and Arctic Oceans. The combination of these factors meant fewer U.S. merchant vessels on the ocean.³⁰

In spite of the diminishing need to protect American shipping, the Navy promptly reestablished its distant stations. In 1866, realizing that problems likely to be encountered in the southeastern Pacific differed widely from those in waters contiguous to the continental coastline, the U.S. Naval forces in the Pacific were reorganized into the North Pacific and South Pacific Stations. Over the next decade the Navy Department recombined and separated the two Pacific Stations on several occasions. By 1878, a single Pacific Station was reestablished and remained until past 1923. From 1866 to 1897 Mare Island Navy Yard served as home for the ships of both of the Pacific Squadrons. Yet, the condition of the ships on the Pacific Station in the years following the Civil War was poor. Hard service and hasty repair during the war shortened the effective lives of the ships. Congress, with an eye more on economy rather than safety, frequently put off overhauling naval vessels as long as possible. Often ships sent to the Pacific as reinforcements to the fleet stayed there until stricken from the *Navy Register*, usually after rotting tied up "in ordinary" at Mare Island.³¹ The poor condition of the vessels was not improved by the post-war Navy Department prohibition of the use of steam power due to the expense of coal. This was particularly hard on the ships in the Pacific with its vast expanses of calm waters and crosswinds. Harder still because the sail power of most ships in commission during the Civil War had been reduced so they could operate more efficiently under steam. To remedy this problem, the Navy Department sent all ships in the Pacific Squadron to Mare Island to receive full sail rig.

Mare Island was not immune to the post-war malaise that struck the Navy. In the years following the end of the Civil War, the yard suffered from scandal and fraud. In 1870, a time clerk in the Construction Office was found giving workers credit for overtime hours not worked and then splitting the proceeds with them. In 1877, the *San Francisco Chronicle* ran an editorial asserting that the commandants of Mare Island had long been subservient

²⁹ Carroll Storrs Alden, *The United States Navy* (Chicago: J.B. Lippincott Company, 1943), 282.

³⁰ Johnson, *Thence Round Cape Horn*, 122; Alden, *The United States Navy*, 283.

³¹ Johnson, *Thence Round Cape Horn*, 128-129.

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to politicians and hired workers solely on the basis of party allegiance. The article further charged that the yard was hiring incompetent men and paying them twice the wages of workers at East Coast Navy yards. Often the cost to repair a ship at Mare Island was 100 percent more than the initial cost of the vessel. For a time the Navy Department was reluctant to order ships to Mare Island for overhaul, as the yard had a reputation for making the work last as long as possible, and that a ship entering the yard for even minor repair would be lost to the Squadron for months.³²

In spite of the neglect naval forces suffered during the early years of this period, in 1872 the U.S. Congress indicated support for a well-maintained Pacific fleet by authorizing the construction of the stone drydock at Mare Island. Designed by Civil Engineer Calvin Brown, the stone drydock was only the second built for the Navy, the first on the West Coast. His positioning of the dock in the yard represented the first major break from the Sanger Plan in the shipyard.³³ Instead of placing the drydock in line with the Smithery, Brown moved it to work with the Iron Plating Shop, the newest function on the base. He also relocated the sawmill to the south end of the yard where docks to receive timber had been built. By authorizing the drydock with an estimated cost at about \$2,000,000, Congress recognized the fact that a Pacific fleet was vital to the defense of the United States. Before beginning the drydock, Brown toured dockyards in Europe looking for innovations in naval construction. The design he brought back was apparently new to America. Brown proposed building the dock's shell out of concrete and then embedding granite blocks into the shell. In his original design the cross section of the dock formed an inverted arch, with each stone cut to the line of the arch. This arch shape was later lost in a revision of the plan that widened the dock. The first concrete was poured in 1874 and the first stone laid the following year. The granite blocks were cut from quarries at Crystal Lake, Pino, Rocklin, Folsom, and Penryn. The dock was not finished until 20 years later in 1891 at \$400,000 over budget.³⁴

Brown was first assigned to the post of Civil Engineer in charge of the Bureau of Yards and Docks at Mare Island from 1862 to 1864, and then again from 1869 to 1881. Educated in Boston under Loammi Baldwin and Alexander Parris, Brown's first posting with the Navy was in 1841 as Civil Engineer at the United States Navy Yard at Kittery, Maine. He remained there for five years, during which time he oversaw the construction of the quay wall and introduced the practice of blasting rock in deep water. The Navy next assigned Brown to the yard at Norfolk, Virginia, where he superintended the construction of the quay wall and a large number of buildings. In 1861, he was ordered to Mare Island, where he remained until 1864. Only two buildings remain that are associated with Brown during his first term: Buildings 45 and 69. After leaving Mare Island, Brown went into

³² Lott, *A Long Line of Ships*, 97; *San Francisco Chronicle*, November 21, 1877; Johnson, *Thence Round Cape Horn*, 136.

³³ Map of the Navy Yard at Mare Island, California 1860, 1874.

³⁴ Lott, *A Long Line of Ships*, 102; Letter, March 24, 1879, Chief Bureau of Yards and Docks to E. R. Calhoun, USN, March 24. MINSY, 1854-1910 Letters from Bureau of Yards and Docks, RG 181, National Archives, San Bruno, California; E.D. Wichels, "Pages From the Past" *Vallejo Time-Herald*, May 8, 1966.

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private practice where he oversaw the construction of the large dam for the Spring Valley Water Works reservoir at Pilarcitos. He also executed surveys and designs for the canal and locks at Willamette Falls, Oregon. Brown was also associated with the Board of Commissioners on the Central Pacific Railroad, and later one of the Commissioners in charge of regulating both the Central Pacific and the Southern Pacific railroads. He was reappointed as Civil Engineer to the Mare Island Navy Yard on May 13, 1869. During his second term as Civil Engineer, Brown supervised the building of a large portion of the foundry and machine shops, the construction of the sawmill, the ordnance storehouse, and the Iron Plating shop. Also completed during his term were the Marine Barracks, the hospital, a powder magazine, and reservoir system for the protection of the ammunition depot. He completed Building 87 of the Steam Engineering complex, the only example of Gothic Revival form on the yard, and designed the stone drydock.

The function of the ammunition depot changed little during the early years of this period, with crews from each ship still responsible for handling and storage of their own ordnance. This being the case, little improvement to the area was needed save for additional storage as the number of ships in the Pacific Squadron increased. To provide this additional storage area, the depot added a powder magazine in 1870. Made of sandstone, Building A20 is an excellent example of stone masonry, although the work is not as fine as found in A1. Other buildings constructed in the 1870s include Building A6, a brick shell house used for refilling shells, and Building A44 a Watchman's House situated on the bluffs above the magazine. There were probably wooden storehouses in the area as well. In 1890, an additional shell house (A5) and Watchman's House (A42) were added to the ammunition depot.

In 1892, 15 sailors from aboard the USS *Boston* died as a result of an explosion that occurred while they were refilling shells. As a result, the Navy and the Bureau of Ordnance changed the policy of ordnance handling. In addition to training civilians to do the work, the Bureau now designated separate facilities for loading and unloading shells. The construction of filling house Building A16 and the gun cotton magazine A11 in 1895 appear to reflect this policy change. Additionally, several temporary sheds were built on piers in the mud flats. Another improvement to the depot during this period was the reconstruction of the reservoir in the bluffs above the magazine built to provide water in case of fire.³⁵

Although a hospital reservation of approximately 10 acres was included in the original shipyard plans, construction of the base hospital did not begin until after the Civil War. From 1854 to 1870, doctors from the Bureau of Medicine and Surgery nursed the sick and wounded in a temporary facility apparently located in the civilian employee residential area of Dublin. Although given the title hospital, the facility operated more as a dispensary rather than a full-fledged infirmary. In 1869, a guard house near the ferry landing was sawed in two and half was moved to a site near the ammunition depot to serve as a "pest house," presumably to isolate patients with highly communicable diseases. Responding to the need for adequate medical centers demonstrated by the

³⁵ J. Vann 1995; *Mare Island Grapevine* October 7, 1994; *Vallejo Evening Chronicle* October 14, 1897.

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Civil War, Congress authorized funds to enlarge and modernize base hospitals. In 1869, under the direction of Calvin Brown and Surgeon J.M. Browne, work began on the hospital at Mare Island. The building was sited in the area designated by the Sanger Plan. Estimated to cost about \$250,000, the structure was 256 feet long and 50 feet wide and consisted of three stories and an attic and a Mansard roof. This original brick hospital was destroyed in the 1898 earthquake and the replacement building was constructed on the first building's basement story. None of the other buildings from this early period still exist.³⁶

As with the Hospital Area, the Marine reservation laid out in the Sanger Plan for Mare Island was not built until after the Civil War. Shortly after the establishment of Mare Island Navy Yard in 1854, Commander Farragut requested a Marine guard to protect and ensure the safety of the station. It was not until 1862, however, that Marines were ordered to Mare Island. In response to a request by Pacific Squadron Commander Flag Officer Charles Bell, Secretary of the Navy Gideon Welles assigned a contingent of 140 Marines to the Navy Yard. Captured and released by the Confederacy while in the Caribbean, the Marines arrived at Mare Island in 1863. They were temporarily quartered on the USS *Independence*, and then in the loft of the unfinished foundry (Building 85). Permanent quarters were not established until nearly a decade later.³⁷

The original Marine Corps Barracks at Mare Island was completed in 1871. It was a yellow, two-story, brick structure some 500 feet in length containing a kitchen, bakery, mess hall, and laundry. A prison (Building 84) was located behind the building. The barracks was sited just west of today's Building 866, the area originally designated as the Marine reservation. Fronting the barracks to the east, a parade ground extended out approximately to Cedar Avenue. Flanking the parade ground on the south was a house for the commander of the Marine Corps detachment, completed in 1870 (Building M1). In the late 1880s, three additional structures for Marine officers quarters (M2, M3/M4, M5) were built on the north side of the parade ground. Usage of the original Marine Barracks changed when the Marine compound moved to a more westerly location on the island and a new barracks building was built in 1917. The original building was used for a variety of purposes until the early 1950s. The original Marine Corps Parade Ground was converted to baseball diamonds. In 1952, the Navy razed the original barracks building to make room for Building 866. At the same time the officers' quarters M2, M3/M4, and M5 were moved to their current location on the base. The Marine prison (Building 84), which stood behind the original Barracks, was expanded twice, first in 1901 and again in 1909.

A major change in the landscape of Mare Island began in 1868. In August of that year Commodore James Alden assumed command of the Navy Yard. Prior to this time the only trees on the base were a few native live oak, toyon, and buckeye located on the bluffs at the southern end of the island. Previous Commandants believed that

³⁶ Lott, *A Long Line of Ships*, 102.

³⁷ Lott, *A Long Line of Ships*, 76; Letter 3 Aug 1863, MINSY Commandants Office, Letters Received from the Bureau of Yards and Docks, RG181, National Archives, San Bruno, California.

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the climatic conditions and the prevailing summer winds precluded the growth of large trees on the island. Alden concluded otherwise and shipped in a schooner full of shade, fruit, and ornamental trees including, pine, poplar, acacia, locust, almond, apple, olive, bay, elm, eucalyptus, apricot, fig, and willow. Alden Park was named to honor the Commandant who helped to transform the bleak, dusty island.³⁸

In 1878, a *San Francisco Chronicle* article stipulated that the Mare Island Navy Yard would probably have to be abandoned due to the "rapidly decreasing depth of the harbor" due to silt build-up associated with mining debris. In 1882, Congress ordered the Secretary of the Navy to appoint a three-person committee to assess the condition of the nation's Naval Yards. Additionally, the commission was to report on the advisability of closing any of the yards not suited to the manufacture and repair of ships in the "steel age." In a report dated June 6, 1883, the commission concluded that it was absolutely necessary to retain Mare Island Navy Yard.³⁹

3.a. Significance in Military History

The significance of Mare Island in American military history during this period relates to its indirect support of the surviving Pacific Squadron. While it languished and was criticized for its inefficiency, the shipyard at Mare Island was nonetheless an indispensable part of the maintenance of American naval presence on the West Coast. The ammunition depot similarly continued its role as the principal storage facility for ordnance for American ships in the Pacific. The naval hospital was the first of its kind on the West Coast and contributed directly and indirectly to the maintenance of an American naval presence in the area.

3.b. Significance in Industrial History

The Mare Island operation was of marginal significance in industrial history during this period. Few improvements were made to the industrial methods used in the repair and construction of ships as practiced at the island. Indeed, the base experienced a period of retrenchment in actual work and in innovations in its methods. The base survived because of its preeminence on the West Coast, not because of perceived superiority in methods. The one major improvement to the facility was construction of Drydock 1, the huge stone drydock that was the first such facility on the West Coast and the second in the nation. This facility would in time add to the industrial capabilities of the base. Its significance lies chiefly in the area of engineering and is discussed below.

³⁸ Lott, *A Long Line of Ships*, 97.

³⁹ *San Francisco Chronicle*, January 27, 1878; Memoranda of the Navy-Yard Commission, June 6, 1883, Sen. Doc. 1, 48th Cong., 1st sess., 5-10, 33.

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3.c. Significance in Engineering and Architecture

The buildings from this period are significant in essentially the same context as that of the 1854-65 period, as excellent examples of 19th century industrial and residential buildings. Relatively few buildings remain from this period, reflecting the quiescent nature of the shipyard activities there and a correspondingly slow pace of construction. The buildings and structures from this period differ little in building technologies or architectural style from the pioneering era. They do reflect, however, a diversification of the function of the base, as administrative buildings, a residential sector, a hospital, and a Marine base were constructed to accompany the core shipyard and ammunition depot operations. The multiplicity of functions added some diversity to the building types as well, as a new military unit -- the Marines -- built in its accepted mode and as the base allowed some civilian residential construction.

Shipyard buildings best reflect the continuity of design from the earlier period. While new personnel took charge of the civil engineering office, there was very little change in basic building techniques or styles. The major buildings from this period were designed by Calvin Brown. Brown's buildings were fundamentally in accordance with those designed by Turner in terms of building technology as well as architectural styles. His shipyard buildings are executed in brick, generally with the type of Classical Revival detailing found on the earlier buildings. His Building 77 is a two-story brick building with a half-round opening in its gable end, dating to 1870. His Building 50 is a two-story brick building with a denticulated cornice and corbelled brick supports, granite sills and segmental arch window openings. All feature gabled roofs without ridge monitors; the earliest ventilation monitors at Mare Island date to just after the turn of the century. Brown's greatest achievement was the initial design of the great masonry Drydock 1, 122 feet wide, 508 feet long, with a depth of 32 feet, finished in stepped dressed granite blocks. While designed by Brown in 1871, the work was not completed for 20 years. This remarkable feat of masonry construction is distinctive in the context of drydock construction and in the larger context of large masonry structures, a strong point in the engineering career of Brown. It is one of the most remarkable pieces of masonry construction in California.

Construction in the Ammunition Depot repeated almost without variety the traditions of the earlier period, especially with respect to brick magazines and vernacular wooden residences. Magazines from this period are brick masonry with corbelled cornices and metal covered gabled roofs, similar in form to earlier examples of the type. What is distinctive about the second phase construction in this area was the building of additional residential units, symbols of a maturing of the base. Included in this group is Building A42, the Watchman's House, a wooden two-story structure in a gable-front with wing form, with a steep front gable, built in 1890. Building A44 was also built during this period. These vernacular woodframe residences contrast sharply with the high arts architecture utilized in the residential area during this period. Only the Ammunition Depot residences remain from this period, except for two private residences moved into the residential area during the 1930s.

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Even more symbolic of the development of a community at Mare Island are the buildings in the residential-administrative core, north of the shipyards. As noted, stately masonry residences were built there during the 1850s; all were destroyed in the 1898 earthquake. Other buildings from this period did survive in the area, including Building 47, the base Headquarters, a Renaissance Revival two-story brick building, constructed in 1870. Building 47 is the most enduring symbol of the base and is easily recognizable as a product of this period, despite substantial additions made in later years.

The permanent Marine Corps base at Mare Island was established in 1871, at a location north of the hospital. The centerpiece was a huge barracks, forerunner of the current barracks, built in 1917; the 1871 building was damaged in the 1906 earthquake and was subsequently demolished. The Marines constructed a series of handsome residences at the base, five of which still exist. The oldest of these is M1, an 1870 Italianate concrete plastered masonry structure of two stories, remodeled with Classical Revival features in 1900. The others are handsome Eastlake wooden buildings, constructed in the late 1880s. All homes other than M1 were relocated to the current Marine Corps area in 1952. No evidence exists to indicate the designer of these residences or why he or she deviated so markedly from the traditions of the Bureau of Yards and Docks elsewhere at Mare Island. The distinctiveness of these buildings adds to the diversity of the base and demonstrates the degree to which the Marine detachment was functionally separated from the bulk of activities at the shipyard.

3.d. Significance in Archeology

Use of the features mentioned above was on going during this period and deposits reflective of industrial and domestic activities of this time would still contribute important data to the overall understanding of MINSY history. In addition to the features developed during the preceding period were others that began at this time.

Two important wharfs were built in this period in the shipyard south area. Work began on a long walkway and wharf in 1869 that led from the straits to the hospital (F13). This pier was used for many years to unload and load supplies, patients, and equipment for use at MINSY's hospital. It was the first hospital pier built for the Navy in the West and it is likely buried under fill. Associated tools, supplies, equipment, and refuse discarded over the sides of the elevated walkway and pier might also be preserved under fill and could provide important information on hospital equipment or diet.

The second berth of the *Independence* (F12) was also constructed in the post-Civil War period. This berth was the permanent home of the receiving ship until its sale and dismantlement in 1914. Early records note that in summer time the ship was essentially grounded on mud flats. These conditions, combined with the fill that capped the site after her sale, would have preserved refuse and other deposits from use of the *Independence* and could contribute to the overall knowledge of daily life aboard the receiving ship.⁴⁰

⁴⁰ Letters, Reports and Memoranda sent to the Commandant, January 1 1908 to June 30, 1911, Sanitary Report for 1911, RG181, NARA, San Bruno, p. 461.

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This period also saw new development in the NAD subarea, including a gunner's house (F14) and lighthouse reservation (F15). Refuse deposits from these areas could contribute to themes of consumer behavior, social and economic lifeways, cultural geography, and ethnicity/gender. Although the lighthouse was removed and the point it once sat on cut away in the 1930s, the backyard of the reservation, where refuse would have been disposed of, is still intact. Built in 1871, the lighthouse was operated from 1881 to 1916 by a woman and domestic deposits from this time could be used in gender studies and Victorian idealist interpretations.⁴¹

Mare Island's industrial and agricultural water supply was also developed during the 1870s. Originally, this system consisted of two reservoirs, a system of ditches used to convey the water from one reservoir to another and to magazines, a brick-lined tunnel, and iron pipes to transport the liquid throughout the base. Although the ditch system is fragmented and has been impacted by magazine and golf course construction, the reservoirs are visible structures on the landscape. The gauging house, brick spillway and gutters at the ordnance reservoir (F16), and granite-lined yard reservoir (F17) contribute to the district for their engineering design and construction techniques. The tunnel associated with the yard reservoir is likely present underground and would be a significant contributing element of MINSY's water system and would contribute to understanding base layout and design.

Domestic occupation features associated with the Officers' quarters (F11) are predicted to occur from this period and would be important contributors. In addition, several new residential quarters were constructed during this era. The civilian housing area dubbed Dublin Hill (F18) was partially removed during soil removal operations in the area, but a portion of this community located west of Walnut Avenue might be preserved under fill. Associated deposits could shed light on cultural diet preferences, social and economic lifeways, and design layout. Deposits associated with the Medical officers' quarters, hospital stables, and outbuildings (F19) could also contribute to domestic occupation reconstruction and industrial topics. In the Marine Corps area, refuse from the enlisted men's barracks and mess hall (F21), prison (F21), and officers' quarters (F20) would also contribute to an understanding of daily activity, dietary differences between prisoners, enlisted men, and officers, and social status.

The seawall constructed in the Marine Corps area is predicted to be intact under fill and would serve as an example of construction methods and engineering design from this period of growth and development at MINSY.

⁴¹ Lemmon and Wichels, *Sidewheelers*, 80.

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4. 1898-1918 -- Spanish-American War Through World War I

During the 1880s and 1890s, the United States watched the major powers of Europe and Asia expand their spheres of influence through territorial expansion. Key congressional and naval leaders argued that the United States would never be able to participate in such a program of expansion without a strong Navy. America's program of expansion, including naval expansion, came to fruition during this period and the Mare Island facility grew enormously as a result.

When the administration of William McKinley took office in March 1897, John D. Long, former governor of Massachusetts and one-time member of Congress, became Secretary of War and Theodore Roosevelt became Assistant Secretary. Both were expansionists who believed with Alfred Thayer Mahan, author of the influential treatise *The Influence of Sea Power Upon History* (1890), that national power came about as a result of foreign trade and from the wealth it created. In their view, sea power played a pivotal role in American defense policy, but also in economic policy by expanding foreign commerce, a keystone of national strength and prosperity. With this philosophy, they helped shape American foreign affairs by advocating overseas bases; construction of an isthmian canal to permit rapid reinforcement of the Atlantic and Pacific Fleets; and a strong battle force with which to protect overseas holdings.⁴²

The Spanish-American War (1898) was a momentous event in American history; it gave the United States a colonial empire, and it marked the emergence of this country as a world power. It also showed the American public the importance of a strong Navy. By 1897 when trouble started brewing in Cuba, the Navy was already making long-range plans and improving the fleet's readiness. One of the more important strategies to expanding commerce was to enable American shipping interests to break out of the limited Atlantic Basin by construction of an American controlled canal through Central America. This would open Far Eastern markets to American trade. A festering insurrection in Cuba against the Spanish colonial government aroused American interest in that island, because it was a strategic point to control if the United States was to carry out its plan for an ocean-to-ocean canal in Central America. The Spanish-American War also showed that two fleets were needed, for fighting against even one weak empire required operations in two oceans. On the night of February 15, 1898 a mysterious explosion ripped through the magazine of the USS *Maine*, killing 251 sailors and leaving the battleship a twisted wreck in Havana harbor. Congress appropriated \$50 million for national defense and the Navy rushed to mobilize. The far western Pacific naval bases were called upon to support the war effort in the Caribbean. When the news reached California of the sinking of the *Maine*, the naval yard at Mare Island had six naval vessels along the waterfront in various stages of repair. Extra men were employed to rush these repairs to completion. In one month the workforce at Mare Island almost doubled from 900 to 1,700. The USS *Oregon*, one of the first true battleships, was in San Francisco Bay when the *Maine* blew up. Victory in the Caribbean was said to depend on her. She steamed to Mare Island to take on 400 tons of ammunition before departing

⁴² Captain A. T. Mahan, *The Influence of Sea Power Upon History, 1660-1783* (Boston: Little, Brown, and Company, 1898); Fletcher Platt, *Compact History of the United States Navy* (New York: Hawthorne Press, 1962).

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around the Horn to Cuba. Later that month, the ordnance department also shipped off three carloads of munitions on a long railroad trip to the East Coast, bound for Cuba. Sixty-seven days after leaving Mare Island the *Oregon* arrived in time to take part in the Battle of Santiago Bay.

Acquisition of the Philippines during the Spanish-American War probably affected America's future more than any other result of the war. When war broke out in Cuba, Assistant Secretary of the Navy Roosevelt strengthened the Asiatic Squadron and instructed Commodore Dewey to attack the Spanish fleet in the Philippines. Dewey left the China coast and headed for Manila Bay, where the Spanish fleet was stationed. Five of Dewey's six ships had been repaired or re-outfitted at Mare Island in the previous three years. The monitors *Monterey* and the *Monadnock*, the only ships with heavy guns left on the West Coast after the *Oregon* was detached, were urgently prepared by Mare Island crews for the long trip to Manila. When the firing was finished, the Spanish fleet was completely destroyed. What had begun as a war against Cuba in the Caribbean had resulted in the acquisition of colonies in the South Pacific that would enable America to dominate the Oriental trade. With new territory came new problems. In the Philippines, rebels led an insurrection against United States control that led to island to island combat until 1901. Shortly after the United States took possession of the Philippines, the German squadron arrived at Manila Bay and made hostile motions of occupation. American suspicions about Germany lingered and set in motion a movement in the U. S. Navy to surpass Germany's naval strength.

In contrast to the languid decades following the Civil War, the period from 1898 to 1918 was expansive for the Navy and the naval shipyard at Mare Island. During this era the United States engaged in two major wars, built the Panama Canal, and thrust southward into Latin American affairs. President Roosevelt used the Navy in the Chilean crisis, Nicaragua, Haiti and Dominican Republic campaigns, the Cuban uprisings in 1906 and 1912, the Boxer Rebellion, and the Vera Cruz action. During this period, especially during Roosevelt's presidency (1901-1908) the Navy's fleet of fighting ships expanded dramatically. Before 1900 only eight ships had been built at the Mare Island shipyard, in the next 18 years 30 ships were constructed at the building ways, ten before World War I and 20 during the war years (1914-1918).⁴³

New territories in the Pacific and the growing presence of a Pacific fleet would have meant expansion of shipyard facilities at Mare Island under any circumstances. The appropriations bill for 1898 included funding for extension of the quay wall, dredging to enable the largest classes of vessels to reach the navy yard, completion of a coppersmith shop, a new steam engineering building, and an expansion to a storage building (Building 55). However, a local natural disaster at Mare Island added urgency to the expansion task.⁴⁴ Mare Island yard crews

⁴³ Lott, *A Long Line of Ships*, 255; Dana G. Munro, *Intervention and Dollar Diplomacy for the Caribbean, 1900-1921* (Princeton: Princeton University Press, 1964); A. Whitney Griswold, *The Far Eastern Policy of the United States* (New Haven: Yale University Press, 1938); William R. Braisted, *The United States Navy in the Pacific, 1909-1922* (Austin: University of Texas Press, 1971).

⁴⁴ RG 181, Letters Received, 1854-1910. Box 13 Entry 168, NARA, San Bruno.

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were busy repairing ships for the war effort on the night of March 30, 1898 when a severe earthquake struck Mare Island, sending brick chimneys and walls and slate roofs tumbling down. The quake severely damaged the Steam Engineering shops at the north end of the shipyard, including the machine shop (Building 87), the boiler shop (Building 91), the smithery (Building 89) and the foundry (Building 85). The east walls of the boiler and foundry which were constructed on fill had toppled and jagged cracks ran from bottom to top of the side walls. The smokestack of the Bureau of Construction and Repair blacksmith shop was broken off one-third of the way from the top and had slightly shifted position, rendering the power plant useless. The north end of the waterfront Supplies and Accounts storehouse (Building 69) fell out. In this building, and at the south end of adjacent storehouse (Building 71) the joists were damaged and had to be substantially rebuilt to render the structures safe. The two-story brick sawmill and paint shop were reduced to rubble. The unreinforced masonry walls of the 14 officers' residences on Walnut Avenue were cracked and crumbling and the roofs had been shaken off in some cases. The naval hospital building was also severely damaged with cracks in its brick walls everywhere. All of the 14 officers' quarters and the hospital were later demolished.⁴⁵ The Navy requested \$350,000 for repair and reconstruction of 32 buildings at the navy yard damaged in the earthquake. The surgeon-general asked for another \$100,000 to rebuild the hospital. The Marine Corps' buildings suffered minor damages with repair costs estimated at \$5,425 for damages to the Marine barracks and officers' quarters.⁴⁶

Following the earthquake, LT R. C. Hollyday, who was the Public Works Officer at Mare Island, constructed his major industrial buildings with brick walls reinforced with steel frames (Buildings 99, 101, and 65). Hollyday was born in Maryland in 1859 and was educated in engineering at Washington and Lee University. He spent several decades in private practice, working for railroads and in the design of steel factories. In 1894, he accepted a position as civil engineer for a naval base at Puget Sound, Washington. In 1897, he accepted the civil engineer position at Mare Island, where he remained until 1901. He went on to become chief of the Bureau of Yards and Docks. In 1900, the 14 officers residences were replaced with 12 new redwood-framed residences set on brick foundations. The hospital was also rebuilt in 1900 in a Classical Revival style. Hollyday was followed by Henry Rousseau and Carl Carlson, who together guided construction at Mare Island for most of this period. Henry Rousseau was born in Troy, New York in 1870 and studied engineering at Rensselaer Polytechnic Institute. He joined the Navy in 1898 and would remain in service until his death in 1930, eventually rising to the rank of Admiral and head of the Bureau of Yards and Docks. He was chief engineer at Mare Island between

⁴⁵ Lott, *A Long Line of Ships*, 125-127; RG 181 Letters Sent, Commandant Mare Island to BuDocks, April 1, 1898 and April 16, 1898. Box 5 Entry 168. FARC, San Bruno; *Vallejo Evening Chronicle*, March 31, 1898.

⁴⁶ Secretary of the Treasury, *Naval Hospital, Mare Island*, Sen. Doc. 235, 55:2 (1898), *Repair and Reconstruction of Buildings, Mare Island Navy-Yard*, H. Doc. 415, 55:2 (1898), and *Marine Barracks, Mare Island, Cal.* Sen. Doc. 240, 55:2 (1898).

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1903 and 1906. Carl Carlson was a Swedish immigrant who studied engineering at Case School in Cleveland, Ohio. He joined the Navy engineering corps in 1903 and had three separate tours as Public Works Officer at Mare Island.⁴⁷

The development of the waterfront and investment in public works by the Bureau of Yards and Docks was quite remarkable immediately after the Spanish-American War, and the trend continued through the presidency of Theodore Roosevelt. During this ten-year period, 17 officers' quarters, eight civilian employee residences, and 83 workshops, storehouses, offices, and miscellaneous structures were built on the Mare Island Shipyard. The Ammunition Depot, Hospital Reservation, and the Marine Corps area also expanded during this period.

In 1897, there were 18 navy yards and naval stations in the continental United States. The Bunce Board, an investigating body chaired by the chief of the Bureau of Yards and Docks, inspected the Navy's yards in 1897 and pointed out the inadequacy of existing drydocks and related facilities. The board proposed a massive program of drydock construction and Congress funded construction of four large graving docks at Mare Island, New York, Puget Sound, and Pearl Harbor. With the addition of drydocks came an expansion of related facilities. The existing drydocks and shop buildings on Navy yards were small and old, and were more suited to the repair of wooden sailing ships of 1860 to 1870 than for the modern steel hulled warships of the turn of the century. The shop buildings were inadequately heated and lighted; they were almost devoid of cranes, and the existing power plants were generally insufficient. In the decade following the earthquake at Mare Island, the new construction program in the industrial area included steps to provide more modern shops; addition of ventilating monitors to existing shops (Buildings 55, 69, and 71); extensions to lighting, water, and fire protection systems (Buildings 99 and 99a); conversion of the central power plant from coal to oil fuel; an improved waterfront, including construction of dikes to maintain water depth, new berths, a new ferry slip and reconstruction of the railroad track leading to the freight shed, down Central Avenue and in the area of Dock Street south of Drydock No. 2; an extension of the quay wall south of the entrance to Drydock No. 2; an addition of a larger drydock (Drydock No. 2) capable of docking any ship of the Navy afloat or under design; and improved coaling facilities.⁴⁸

During the 19th century, the Navy contracted to private industry to construct most of its vessels. Most ships constructed by Mare Island before 1904 were wooden and steel hulled tug boats used by Mare Island to carry on the work of the shipyard. After the Spanish-American War, Mare Island and other naval yards insisted they be allowed to compete with private yards in shipbuilding. Finally, Mare Island was awarded the contract for building the steel-hulled training ship *Intrepid*, a full-masted sailing vessel. Although a dinosaur by modern

⁴⁷ Cardwell, *Historic Survey*, 1985; Lemmon and Wichels, *Sidewheelers*, 1977.

⁴⁸ *The Bureau of Yards and Docks in World War I* [hereafter BuDocks WWI], 17-18; Annual Report of the Navy Department for the Year 1909, 115-118, 139-147.

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standards, the launching of the *Intrepid* on October 8, 1904 signaled the emergence of Mare Island as a shipbuilding plant. Mare Island further proved its efficiency by constructing two steel colliers, the *Prometheus* (1908) and the *Jupiter* (1912). The *Prometheus* was the biggest, longest, heaviest, and most expensive vessel built at Mare Island up to that time and was built for less money than comparable ships at the Brooklyn Navy Yard. In the early 20th century the Bureau of Steam Engineering began to experiment with electric drives as a means of reducing speed from the turbine to the propeller. The *Juniper* was the first electrically propelled ship constructed for the Navy. The *California*, also constructed at Mare Island between 1915-1919, was the first battleship installed with electric drive.⁴⁹ The construction of the two successful collier projects was followed by construction of several smaller river boats -- a 36-ton revenue cutter, two 160-ton gunboats, oil and water barges, and a ferry boat -- at Mare Island Shipyard in the years leading up to the outbreak of World War I. The only other large ships undertaken at Mare Island prior to the war was the 5,500-ton steel oil tanker *Kanawha* and her sister ship the *Maumee*. The *Kanawha* was the first oil tanker built for the Navy.⁵⁰

During the first decade of the 20th century, the Navy Department continuously debated whether or not a battleship squadron could be spared for the Pacific fleet. While the General Board affirmed that the United States needed a "two-ocean navy," it feared that an attack from Europe while the American battleships were divided between the Atlantic and Pacific, might spell defeat for both fleets before they were united. As the actual number of warships increased, concern shifted to whether there was an adequate home base for a battleship fleet in the Pacific. The General Board tried to overcome this in part by establishing bases in the Philippines and at Pearl Harbor, but sending a separate squadron of battleships and armored cruisers to the Pacific Coast required facilities to repair and maintain them. When Roosevelt turned to the Navy to ascertain whether the battleships could be maintained in the Pacific in good condition, he learned that shore facilities on the Pacific Coast were limited. In 1907, only the drydock at Bremerton in Puget Sound could accommodate the battleships and cruisers, if sent to the Pacific. The shallow channel at Mare Island limited its usefulness for the largest class of warships.⁵¹

Many improvements to the shipyard shops, storehouses, drydocks and shipways were undertaken at Mare Island to prepare for the coming of the Pacific Fleet and in preparation for World War I. Shipway No. 1 was enlarged in 1902, 1905, and 1916; and in 1926, a second shipway was added. Shipway Nos. 3 and 4 were completed in 1917 at the south end of the yard. Drydock No. 2 at Mare Island, begun in 1899 and scheduled for completion by April 1902, was finally finished in 1910. But even with all these improvements channel restrictions inhibited access to Mare Island shipyard by the largest battleships and cruisers of the fleet. Thus, Mare Island constructed

⁴⁹ Neuhaus, "Fifty Years," Part III: 1908-1921. The *Jupiter* was later outfitted with a flat deck and became the Navy's first aircraft carrier -- the USS *Langley*.

⁵⁰ Lott, *A Long Line of Ships*, 147-157.

⁵¹ Braisted, *Navy in the Pacific*, 203-239.

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only one battleship, the *California*. At 626 feet in length, 97 feet beam, and 32,300 tons displacement, she was the largest ship yet built on the West Coast when she was launched on November 20, 1919. When released down the shipway the restraining cables broke sending the hull of the *California* across the narrow channel swamping boats and taking out the ferry slip on the Vallejo side. Construction of destroyers remained the yard's specialty. Mare Island set a record with the launching of the destroyer *Ward* in 17 days from keel laying. Eight destroyers were launched at Mare Island during World War I and another eight commissioned during the war were launched by 1920. Supplying these vessels (and all others constructed or repaired at Mare Island) with ammunition was the responsibility of the Mare Island Ammunition Depot.⁵²

The U.S. Radio Reservation, Mare Island also has its origins in this period. In 1899, the Navy conducted the first experiments with the use of Marconi's wireless telegraph on U.S. warships. In 1900, a Marconi unit was installed at the Naval Torpedo Station, Newport, Rhode Island. Further tests were conducted by a board of Naval officers in 1902 on communication between two ships at sea and between a ship and land station. The following year seven sets were ordered for as many ships and 13 additional ordered for shore establishments. In 1903, Mare Island and four other Navy yards were provided instructions in fitting radio equipment in naval vessels.⁵³

During the mobilization effort, the Navy formulated a six-year building program that included an unprecedented expansion of navy facilities by the Bureau of Yards and Docks. The preparedness program of 1916 provided for expansion of the fleet and drydocks, Marine bases, fuel depots, training stations, arsenals, and other shore facilities to service that fleet. A large part of the Bureau of Yards and Docks activities pertained to improving and equipping navy yards for the construction of ships. This was done principally at the main shipbuilding yards -- New York, Philadelphia, Norfolk, and Charleston on the East Coast; and Mare Island and Puget Sound on the West Coast. Another of the Navy's immediate needs was trained men, the Bureau built at least 35 training camps, many of which (like the training camp on the South Shipyard at Mare Island) were erected with temporary structures located on ungraded open space at existing naval facilities.⁵⁴ When the country was finally drawn into the war, one of the most complete mobilizations of the personnel and materials resources of the country was undertaken. During World War I the public works of the Navy increased in value from about \$211,000,000 to \$469,000,000, a total wartime expenditure greater than that spent on all Navy Yards and Naval Stations in the previous 125 years.⁵⁵

⁵² Committee on Naval Affairs, *Report*, H. Doc. 41, 64:1 (1916).

⁵³ Herbert M. Neuhaus, "Fifty Years of Naval Engineering In Retrospect," Part II: 1898 to 1908 and Part III: 1908-1921; Plan of U.S. Navy Yard, Mare Island, 1918 and 1925; Captain L. S. Howeth, *USN History of Communications-Electronic in the United States Navy* (Washington D.C., 1963), 60-115.

⁵⁴ Rear Admiral Eugene J. Peltier, USN, *The Bureau of Yards and Docks of the Navy and the Civil Engineer Corps* (1961), 16-17.

⁵⁵ BuDocks, WWI, 19.

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4.a. Significance in Military History

The Mare Island Historic District is significant in military history for its direct role in preparing ships for use in the Spanish-American War, for its direct role in support of post-war operations in the Pacific, including battling rebellion in the Philippines, and for its somewhat more indirect role in American preparedness and participation in World War I. Mare Island played a direct and important role in the Spanish-American War and its aftermath, most in the staple activities of ship repair and preparation for battle as well as new ship construction. The *Oregon* was fitted for battle at Mare Island and tons of ordnance was prepared for use in the war in the Caribbean. Ships were prepared for the war in the Philippines as well. Mare Island personnel also played an important role in the American naval build-up in the early decades of the 20th century, a build-up that proved pivotal to American success in World War I. It was during these decades that the island was most active in ship construction, at least on a proportional basis to total American ship building in earlier or later eras. It was also during this period that Mare Island-built ships evolved quickly into technologies that would persist through World War II. Mare Island played a significant role in the evolution of naval architecture during this period and contributed significantly to the success of Allied forces during World War I, even though that war was fought only from the Atlantic.

4.b. Significance in Industrial History

The Mare Island Historic District is significant in industrial history for events from this period, relating to the initiation of major shipbuilding activities (as distinct from the long-standing ship repair work) and the adoption of modern efficiency measures in the layout of industrial buildings and design of industrial methods. Mare Island was not alone in this regard; Navy yards throughout the United States participated in large-scale shipbuilding during this period. In addition, the U.S. Navy Yards adopted modern shop building forms, adapted in many instances from automobile factory layout, as discussed in Section 4.c. below. Finally, the Navy struggled during this period to attain industrial processes that matched the efficiency of private sector operations, whether in shipbuilding or any of the other American manufacturers. To this end, the base during this period appointed its first efficiency expert, LT Holden Evans. Evans, a student of the scientific management practices of Frederick Taylor, worked tirelessly to free the base's industrial operation from what he saw as the "caste system" of the Navy and to expunge the inefficiencies that came with an operation that was, in his words, "ridden by labor unions and politicians [and the] graveyard of the ambitions of naval constructors."⁵⁶ Evans' scientific management principles, combined with the efficiencies of building design and advances in naval architecture, brought Mare Island to a level of industrial management that survived through its greatest test, during World War II.

⁵⁶ Lott, *A Long Line of Ships*, 145.

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4.c. Significance in Engineering and Architecture

Buildings at Mare Island from this period are significant in the areas of architecture and engineering, as distinguished examples of several key developments of the early 20th century: modern reinforced concrete and steel framed industrial building design, including curtain wall construction; the importance of the Colonial Revival in residential design, especially in military officer housing; and Beaux Arts classicism in institutional design. The buildings from this era afford an opportunity to study the disparate trends in American architecture from this period. The conflicting trends also contribute to a certain disunity in the appearance of the base, a disunity that only increased over time.

While the overall complexity of the base increased with new functions, the heart of Mare Island was always the Shipyard North and it is here that the most important buildings are located. Construction techniques used in shipyard buildings evolved over the two decades. Turn-of-the-century buildings relied upon new framing methods but traditional architectural treatment. By the end of World War I, however, shipyard designers had abandoned altogether the traditional forms, to an extent that the World War I era buildings seem to the modern eye to have far more in common with modern construction than with the 19th century roots of the base.

Shipyard construction during this period was dominated by the work of three civil engineers, Richard Hollyday, Henry Rousseau, and Carl Carlson. The three are transitional figures in terms of the architectural character and building technologies at Mare Island. Hollyday was given the challenge of rebuilding the base following the devastating earthquake of 1898 as well as expanding the facility in response to the exigencies of the Spanish-American War. In style and materials, however, he had far more in common with Turner and Brown than with those who came after him. Rousseau and Carlson presided over most of the build-up at Mare Island prior to and during World War I. It was Rousseau and Carlson who broke most cleanly with the 19th century and introduced modern building technologies and a distinctly modern industrial style.

Hollyday's principal contribution was in the rebuilding of structures damaged or destroyed during the 1898 earthquake. His greatest challenge was to find substitutes for the unreinforced masonry that had proven so disastrously dangerous. To achieve seismic stability, he abandoned altogether the use of unreinforced masonry, reconstructing the major industrial buildings with metal frames often faced in non-load-bearing brick masonry. While the buildings appear quite similar to their predecessors because of the brick facing, they are structurally distinct, relying upon metal framing techniques and theories that were only beginning to be perfected in commercial and industrial buildings in New York and Chicago.⁵⁷ His approach to rebuilding the base, then, was both daring and conservative. He adopted relatively new framing techniques but dressed his buildings in brick facings that deviated only marginally from the classicism of his predecessors, adopting conservative buildings in neo-classical or Colonial Revival design. Rousseau's tour as civil engineer was relatively brief and his

⁵⁷ Carl W. Condit, *American Building Art: The Nineteenth Century*. (New York: Oxford University Press, 1960).

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buildings exhibit little innovation from the work of Hollyday or Turner and Brown before him. His buildings are predominantly steel frame with brick exteriors, similar to those of Brown. Notable examples include buildings 118 and 165 which in their brick exteriors and Classical Revival detail conform neatly with all similar structures from the 19th century.

Carlson pursued several tours at Mare Island and his buildings date as recently as 1921. Because he served so long, he was responsible for construction of a large number of buildings at the base. Many, like the power house (Building 121), are traditional in design, framed in steel but dressed in brick masonry to maintain consistency with the old shipyard. During World War I and after, however, Carlson adopted warehouse forms and technologies from the private sector, most notably the warehouse designs of the automobile factories which at about that time were revolutionizing the factory form.⁵⁸ The best examples of these are the two "curtain wall" industrial buildings in the Shipyard: Building 271 and 273. The "curtain wall" -- a rigid frame of steel or concrete with only glass curtains for walls -- was the essence of both the skyscraper and the modern factory. Building 271 achieves structural stability with a steel frame, Building 273 with a reinforced concrete frame. The buildings conform with a general upgrading of the Navy's construction methods and the industrial management theories that guided factory operations. Elsewhere, the military had drawn from the private sector to develop modern industrial design for its buildings. Albert Kahn, best known for automobile factory design, had laid out several military bases during this period, including the Air Corps Rockwell Field in San Diego (now NAS North Island). Carlson's adoption of frankly modern designs indicate a final end to the neo-classical tradition at Mare Island, at least in the shipyard. The curtain wall buildings, some of which are attached to older brick buildings, made no reference whatsoever to the earlier buildings and, in fact, are far more comparable to the big shipyard buildings of the World War II-era than to the earlier traditions of Turner and Brown.

There is some question, however, as to whether Carlson should be credited for this transformation, or whether the credit belongs to the Bureau of Yards and Docks nationally. The building form exemplified by Buildings 271 and 273 was built throughout Navy yards in the United States during World War I. Very similar structures were built, for example, in the Philadelphia yard during this period, as well as in the Norfolk yard.⁵⁹ Carlson did not likely invent the form; rather, he probably adapted it from standard specifications developed by others. If any individual is to be credited with the building form, it is likely to have been Kahn, who designed a number of buildings for the Navy during this period. Whatever its origin, the curtain wall factory became the standard type in the shipyard at Mare Island after 1917 and would dominate construction there through the end of World War II.

⁵⁸ Carl W. Condit, *American Building Art: The Twentieth Century*. (New York: Oxford University Press, 1961). The most notable designer of these important warehouses was Albert Kahn. Kahn was long employed by the Bureau of Yards and Docks and the Army Quartermaster Corps to design large buildings, including the earliest Naval Air Station hangars.

⁵⁹ U.S. Navy, *Activities of the Bureau of Yards and Docks, Navy Department, World War, 1917-1918* Washington: Government Printing Office, 1921.

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Drydock No. 2 was completed during this period, with work commencing in 1899. Work was initiated by the Atlantic Gulf and Pacific Company of San Francisco but was completed, more than a decade later, by a Philadelphia company. The second drydock was distinctive for its concrete design, a major achievement in hydraulic concrete construction during the early 20th century California. Although a modern concrete structure, it pays homage to its masonry predecessor through incised masonry-like elements at its gates.

The residential area was decimated by the 1898 earthquake and was completely rebuilt shortly thereafter. The bulk of historic housing stock at Mare Island was built during this period, as was the chapel (Building 104) and a major annex to the headquarters building (Building 47A). This residential and administrative complex forms a major nucleus of the historic building stock at Mare Island, comparable in quality and quantity to the early Shipyard North buildings and the early Ammunition Depot complex. In rebuilding the residential sector, Hollyday elected to construct in wood, his most obvious concession to seismic concerns. In terms of style, Hollyday adopted the Colonial Revival, fashionable among military officers' quarters throughout the United States.⁶⁰ His choice of the Colonial Revival is noteworthy to the extent he chose not to use regional styles, such as the Mission Revival, which was of emerging importance in civilian residential design at the time and which would be utilized in military construction throughout California in subsequent decades.⁶¹ Hollyday's style is most evident in Quarters A through O. The Mission Revival would be adopted into the architectural vocabulary of Mare Island during the 1920s, particularly in the hospital area. The Mission Revival buildings never quite fit into the stylistic environment, however, simply because Hollyday and those before him had populated the area with neo-classical and Colonial Revival buildings.

Hollyday's rebuilding of the major quarters in wood set the tone for virtually all subsequent construction in the area. The theme was repeated in the construction of Building 47A, a 1917 addition to the 1870 headquarters building. The Shingle Style chapel, built in 1901, was designed by a private architect, Albert Sutton. Sutton was born in Portland, Oregon in 1866 but studied architecture at the University of California. He practiced briefly in California in association with Charles Peter Weeks. The two were involved with the design of one phase of the California State Capitol Building in Sacramento. In 1916, he returned to Portland, where he continued a successful practice until his death in 1923. Very few of his buildings remain in California.⁶²

⁶⁰ Grashof. The Colonial Revival was the most common residential building form for the Army throughout the first three decades of the 20th century.

⁶¹ The Mission Revival was the preferred style throughout military bases in California. The trend apparently began with Bertram Goodhue, who laid out Mission/Spanish Colonial bases for the Bureau of Yards and Docks in the San Diego area, including the Marine Corps Recruit Depot and Naval Air Station. These were built several decades after Hollyday laid out Officers' Row at Mare Island.

⁶² Henry F. Withey and Elsie R. Withey, *Biographical Dictionary of American Architects (Deceased)*. (Los Angeles: New Age Publishing, 1956), 586; *The Architect and Engineer*, (Vol. :XXV, No. 3, December 1923), 114.

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The great Marine Corps barracks, Building M37, was constructed during this period. While under the jurisdiction of the Navy's Bureau of Yards and Docks, the Marine Corps -- at Mare Island as elsewhere -- proceeded on an independent course. None of the buildings in the Marine area, whether the Eastlake residences of an earlier period or the Renaissance Revival of M37, bear any real relationship with what the Navy was doing elsewhere. Nonetheless, Building M37, a three-story reinforced concrete building with a stucco surface and tile roof, represents a major individual achievement at the base. Another Marine Corps building from this period is Building 84, a prison built by the Marines. The building includes a small brick section built in 1895. The bulk of the structure, however, was constructed in 1901 and enlarged ca. 1909.

Somewhat surprisingly, the Ammunition Depot elected not to adopt reinforced concrete technologies for magazines built during this period, pursuing instead construction with steel framed brick masonry. It was not until the 1920s that the depot would consistently use concrete for its most volatile storage and wood-frame buildings elsewhere.

Mare Island featured a Naval hospital as early as 1869 and it is on that basis that the hospital is regarded as the oldest on the West Coast. The existing hospital dates to the turn of the century and later. The heart of the complex is Building H1, an 1899 Beaux Arts Classical Revival structure. The building was designed by W.W. Poindexter, a Washington, D.C. architect who specialized in design of military hospitals. A Virginian by birth, Poindexter practiced in Washington between 1865 and 1908, with most of his work being in the eastern United States.⁶³ The building is an excellent example of Beaux Arts design, favored for prominent public structures such as this. It is alone, however, among the architectural specimens of Mare Island, consistent with none of the major groupings elsewhere. The Bureau of Yards and Docks would compound this isolation when it expanded the hospital area during the 1920s, building additions and new buildings in a largely incompatible Mission/Spanish Colonial Revival design.

4.d. Significance in Archeology

The 1898 earthquake resulted in many changes that effectively altered the disposal patterns on Mare Island. With the reconstruction of officers' housing, indoor plumbing was added, eliminating privies. Refuse from all areas of base was collected every morning in cans and transported north of A Street and dumped. Dumping continued in this area, gradually spreading north, throughout the period. The importance of domestic occupation deposits from this period dwindles due to increased data in the written record and change in disposal patterns.⁶⁴

⁶³ Withey, *Biographical Dictionary*, 477.

⁶⁴ Letters, Reports, and Memoranda to the Commandant, January 1, 1908 to June 30, 1991, Sanitary Report of 1909, RG181, NARA, San Bruno, p. 331.

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In spite of changes on base, several features were established during this period that do contribute to the Shipyard's history. Discarded tools, industrial refuse, and structural remains are predicted to be present under fill at the locations of the rebuilt hospital wharf (F24), the 1900s Torpedo Board Wharf (F25) in the NAD area, and the submarine base and wharf (F27) in the north end. Deposits from these wharves could contribute to studies in technological advances in wharf construction, ordnance use, and ship building activities. Deposits from the new crew quarters next to the *Independence* berth could also provide important comparative data under Criterion D. While the sides and roof of the bandstand and hospital pavilion (F26) have been removed, the structural remains evoke a sense of time and place on the hospital grounds. They represent a recreational outlet on Mare Island and contribute to the significance of the shipyard under Criterion A.

5. 1919-1938 -- The Interwar Years

West Coast cities and their political spokesmen had long pressed for a more equal distribution of the Navy between the two coasts. From the 1916 debates over naval preparedness on, West Coast communities contended ever more strenuously that a greater proportion of the enlarged Navy be based in the Pacific waters to protect them. During World War I the enlarged fleet was dispatched to Europe instead of the Pacific, but the build-up of ships for the war gave the West Coast the leverage it needed when peace returned. The post-war sinking of the German fleet reduced the foremost danger in the Atlantic, but Japanese and American rivalry in the Pacific intensified. The increase in the size of the Navy during the war made it more feasible to divide the fleet.⁶⁵ When the war ended in the Atlantic, navalists turned as never before to the upgrading of shore facilities in the Pacific to support the westward movement of the fleet to the Far East. The Navy Department and many others directed an increasing amount of attention to Pacific naval base strategy. The Navy had definitely settled on mid-Pacific route to Asia with the Panama Canal, the Hawaiian Islands, Guam, and the Philippines serving as the major stepping stones. Protective shore facilities for the fleet were required at these points, as well as at naval yards and stations on the West Coast of the United States.

In July 1919 the Navy transferred half of the American armada to the Pacific -- 185 ships, including seven destroyers, nine battleships, battle cruisers, and a host of scouts, submarines, fuel ships, and auxiliaries. The Pacific fleet was placed under the command of Admiral Hugh Rodman. To accommodate the fleet, the Navy planned the construction of new shore facilities and the enlargement of existing ones. These were to be distributed near West Coast metropolitan areas at Puget Sound, Portland, the Bay Area, Los Angeles and San Diego. By 1923 Congress had approved an impressive array of facilities for San Diego, including a Marine Base, a Naval Training Center, and a Naval Air Station. Los Angeles won a submarine base and the West Coast fleet anchorage of the Pacific Squadron. Mare Island obtained waterfront improvements and a dramatic expansion of its shipbuilding capabilities.

⁶⁵ *Annual Report of the Navy Department for the Year 1919*, 7-10.

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The Helm Investigating Commission of 1916 had recommended that the San Francisco Bay Area receive the most sought-after prize -- the main home base of the Pacific Fleet. However, that commission de-emphasized the importance of Mare Island as a home base because of the impracticality of bringing carrier and larger battleships into the shallow and narrow Mare Island Strait. Nearby San Pablo Bay and the Straits of Carquinez contained a limited amount of deep water for anchorage of the fleet. Furthermore, the Mare Island site was as limited in its land base as it was of a deep navigable channel. As the debate unfolded in the years following World War I, the Navy Department clearly favored a mid-bay site. Alameda on the East Bay seemed the most logical choice because it possessed an enormous anchorage, lots of land, easy access to the Golden Gate, a great port facility nearby, and a huge labor and housing supply, as well as a mature urban transportation infrastructure. As early as 1910 various Navy spokesmen had cast doubt on the utility of Mare Island as the principal shipyard and supply depot on the West Coast. Some had even suggested abandonment of the facility. The Vallejo Chamber of Commerce, the local newspaper, citizens of the town, and their representative in Congress, Charles F. Curry, rallied to the defense of Mare Island Shipyard. Closing Mare Island would be a waste of a \$25 million naval investment, argued Curry, and the waste was unnecessary because Mare Island, with its vast shipbuilding and repair expertise, was perfectly capable, if modernized, of serving as the Navy's home base.

A naval commission chaired by admirals W. Parks and J. S. McKean in 1919 reaffirmed the Helm Board's recommendation for a mid-bay home base and two years later a Special Joint Committee of Congress on Pacific Naval Bases chose Alameda as its preferred site. However, the Naval disarmament treaty of 1922 gave Mare Island proponents a boost as the core of the debate over military expenditures shifted to economic and pacifist arguments. Public sentiment for a large navy weakened before the outcry for arms reduction. Congressman Curry convinced President Calvin Coolidge to oppose proposals for a new naval base at Alameda as an unwarranted expenditure in light of the arms limitation treaty of 1922 and the existing facilities at the Mare Island base. The mid-bay home base idea sputtered out in the mid-1920s, and lay quiet for years thereafter. The Navy was left with half of its main battle fleet in the Pacific, but without an adequate base on the West Coast. As a result, the Navy had to expand its scattered facilities in San Diego, Los Angeles, Vallejo, and elsewhere. Mare Island warded off Secretary of the Navy George Meyer's attempt to downgrade it to a second-class naval yard. The Vallejo shipyard retained its designation as the principal West Coast supply depot and its drydock facilities remained open for ship repair and refitting. Despite its physical disadvantages, Mare Island fulfilled its mission by improving the channel in San Pablo Bay and Mare Island Strait, making waterfront improvements, modernizing its repair plants, enlarging the supply depot, and upgrading other facilities for the maintenance and operation of naval forces in the Pacific. Larger Navy vessels which Mare Island could not handle were sent to leased drydocks at Bethlehem Steel Company's shipyard at Hunters Point. In 1940 the Navy finally bought that private shipbuilding plant and began development of the Naval Shipyard, Hunters Point.⁶⁶

⁶⁶ Braisted, *The United States Navy in the Pacific, 1902-1922*, 2:225-230 and 475-490; Roger W. Lotchin, *Fortress California, 1910-1961: From Warfare to Welfare* (New York: Oxford University Press, 1992), 42-63.

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During World War I, the United States Navy had expanded rapidly and arguably it had become the strongest Navy in the world by 1921. At the time of entry of the United States into the war, the Navy had about 350 vessels of all classes. When the Armistice came this number had increased over 700 percent. The Navy was faced with the tremendous task of maintenance of the machinery and apparatus of more than 2600 vessels in service when the war ended. Furthermore, in the years immediately after the war, Mare Island and the other shipyards were busy completing shipbuilding work commissioned during the Great War. Mare Island launched four new destroyers in 1919, two in 1920, and two in 1921. However, these were the last ships constructed at Mare Island Naval Shipyard until completion of the submarine *Nautilus* in 1930.⁶⁷ In accordance with the Washington Limitation of Arms Treaty in 1922, the Navy sank, scrapped, or demilitarized more than a million tons of combatant vessels and from 1923 to 1932 naval shipbuilding was virtually a non-existent industry. Nevertheless, operation of the fleet required shore establishments for service of the fleet; their efficient operation were essential in insuring readiness during peace.

Mare Island had become the major West Coast submarine repair facility during the Great War. A lesson of that war was that submarines would become an even more critical component of naval warfare strategy in the future. Submarine repair bases would be maintained as an essential element to the national security. Even if it was not capable of servicing the entire fleet, the special facilities at Mare Island to serve submarines, namely quarters for personnel, special supplies, and some special repair facilities, made it a significant submarine base. In 1921, a second submarine repair base was opened in California in San Diego harbor. Nevertheless, Mare Island continued to expand its submarine repair base throughout this period and was even awarded a contract to build its first submarine in 1925.

A vigorous testing, research and development program accompanied the expansion of the Navy's submarine fleet in the interwar years. The Navy debated the strategic role of the submarine and various related issues essential to design and construction. Competition ranged from 800-ton coastal boats to 2000-ton fleet boats. Naval representatives traveled to Germany to study German submarine technology and strategy and by the end of the early 1930s a consensus was beginning to emerge. Throughout the 1920s, the Bureau of Construction & Repair and Bureau of Engineering proceeded to explore a 990- to 1400-ton design based on the World War I vintage U-135 as a prototype. By the end of the decade Rear Admiral Thomas Winters of the Navy War College had begun to suggest an imaginative change in submarine warfare strategy that might allow the boats to operate independent of a battle fleet in combined reconnaissance and attack missions. As a result, the submarine was redefined as a weapon of stealth and opportunity too valuable to risk in surface encounters with warships.⁶⁸

The Navy became deeply involved in submarine construction in the interwar years and as a result the Bureau of Construction and Repair and the Bureau of Engineering reached a level of design and construction expertise on

⁶⁷ "Building Ways," Historical Files, Mare Island Historian's Office.

⁶⁸ Gary E. Weir, *Building American Submarines, 1914-1940* (Washington, DC: Naval History Center, 1991), 23-46.

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the eve of Pearl Harbor equal to that of any private submarine builder. The long production run of the S-class submarine provided the Navy for the first time with experience in the naval architecture and engineering of submarines. The fifty-one S-class submarines for many years served as the backbone of the U.S. fleet. The Navy also constructed nine V-type submarines in the 1920s. These submarines were a major improvement over the S-class; however they also represented the final attempt to build a classic fleet submarine on the U-boat design. The *Nautilus* (V-6), the largest V-class submarine constructed, was launched at Mare Island on March 15, 1930. It was a classic fleet submarine. The final two V boats, the *Cachalott* (V-8) and the *Cuttlefish* (V-9), were fundamentally different from the previous seven and represented a transition to the new lighter submarine designs of World War II that employed use of alloys, high tensile steel, lighter engines, and higher machinery speeds.⁶⁹

The increasing appreciation of the strategic and commercial importance of the Pacific in the interwar years was reflected in the continued growth of the Yard. Shops were rearranged and modernized, transportation and docking facilities extended, and the shipbuilding ways improved. The hospital, ammunition depot and submarine repair base areas were developed further with modern, Bureau of Yards and Docks-designed fire-proof buildings. Mare Island was finally connected to the mainland by a causeway in 1919. Built on wooden piers, the causeway contained a bascule bridge to allow for movement of ships up the channel and provided direct access for movement of goods and people across the channel by automobile, bicycle, on foot, or by railway. An improved causeway was constructed some distance to the north in 1935.⁷⁰

Changes in the organizational structure of the Navy, specifically the Bureau of Yards and Docks, are reflected in the changing building styles of the interwar period. By an act of Congress passed on March 4, 1911, the Bureau of Yards and Docks gained the exclusive responsibility for design and construction of all public works of the Navy. During World War I this centralized responsibility was manifested most clearly in the planning and building of training camps, hospitals, aviation facilities, submarine stations, and permanent storage facilities to meet wartime emergencies. Many of the buildings designed for this wartime period were temporary in nature. After the war, the elimination of the employment of outside architects and the centralization of design work under the civil engineers of the Bureau led to the further standardization of permanent building types by building function. In the past the base civil engineer requested authority to carry out work under an appropriation, which when endorsed by the commandant, was then authorized by the bureau. The local base civil engineer had wide latitude in building design, selection of building materials, and architectural styles. After 1911 those same base civil engineers simply filled out a card on which all technical requirements were noted; this card was passed on to civil engineers and architects at the central office of the Bureau of Yards and Docks where the design work was performed. On Mare Island the fruits of this new system of building design is best illustrated in the massive

⁶⁹ Herbert M. Neuhaus, "Fifty Years of Naval Engineering In Retrospect: Part IV, 1921-1938," *Journal of the Society of Naval Engineering*, November 1938, 540-557.

⁷⁰ "Causeway," Historical Files, Mare Island Historian's Office.

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structural group buildings (Buildings 386, 388, and 390), but it is equally evident in the ammunition depot magazines and in the various utilitarian structures erected at Mare Island during this period.⁷¹

The 1930s brought fundamental physical changes to Mare Island. One was the removal of Dublin Hill, a tract of high land near 5th and Walnut Streets; the other was the reclamation of tule land through the construction of dikes and levees to capture the spoils of channel dredging. Excavators gnawed away at the margins of Dublin Hill as early as 1910 to make way for an expansion of the shipyard. Additional material was removed for fill under the submarine base wharf in 1925. Six years later, fill for a 1000 foot expansion of the quay wall, extension of the submarine base north into the former tule lands, and excavation for a supply building and dispensary took more of the hill. Additional fill requirements in the mid-1930s led to razing or relocating some 20 buildings from Dublin Hill, among them old civilian and junior officers' quarters.⁷² Land reclamation in the 1930s roughly doubled the usable acreage on the island. The low-lying tule lands on the north end of the island were raised above the high tide line and became available for construction of housing, shops, storehouses, shipbuilding, and a proposed aviation field. Areas along the western, southern, and southeastern shoreline were also leveed and diked to reclaim additional acreage for expansion.

The Washington Naval Treaty of 1922 and the subsequent Five Powers Naval Treaty limiting ship tonnage did have a significant detrimental impact on the shipbuilding industry for more than a decade. It was probably the gravest period in the history of American shipbuilding, as employment in the industry sank to almost nothing. Yet several notable technological achievements were made during this period in machinery for propelling ships, such as reduction in weight per horsepower ratios in engines, the development of water tube boilers, improvement of shipboard fuel oil and fuel oil heating systems, and use of turbo-electric propulsion systems. The use of alternating current, as opposed to direct current, for the electrical installation for destroyers after 1932 proved to be a major improvement in the field of electric design as applied to naval ships. Technological breakthroughs in electric motors, diesel-electric drive engines, shipboard evaporators, and high-pressure centrifugal feed pumps also came during the twenties. In the area of shipboard electronic systems the Sperry gyro-controlled fin stabilizer was introduced to more effectively sense and moderate the ship's roll. The development of radar, television, underwater acoustics, and mobile radio communications had a major impact on the operation of ships and the new technologies were adapted for a host of shipboard uses. New advances in metallurgy (austenitic stainless steels) and welding (as opposed to riveting) strengthened and lightened shipboard structures and permitted the use of higher operating pressures and temperatures. All of these

⁷¹ This tradition of the Bureau designing all public works appears to have extended only through the interwar period. When emergency mobilization began for World War II, private architects were heavily relied upon to design buildings on military bases throughout the United States. Bureau of Yards & Docks, *150 Years of Doing it Right: The Bureau of Yards and Docks, The Naval Facilities Engineering Command, 1842-1992* (1992), 5; Rear Admiral Eugene J. Peltier, USN, *The Bureau of Yards and Docks of the Navy and the Civil Engineer Corps* (New York: The Newcomen Society, 1961), 15-17; *Annual Report of the Secretary of the Navy for the Year 1911*, 16-17.

⁷² "Dublin Hill," Historical Files, Mare Island Historian's Office.

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breakthroughs of technology kept Navy shipyard repair and refitting facilities busy and were applied to new navy shipbuilding when construction restarted in the 1930s.⁷³

After 1930 the naval building programs of Japan, and later Italy and Germany, led the United States to reconsider its naval requirements. In 1929 and 1930 five heavy 10,000 ton, eight-inch gun cruisers of slightly varying designs were ordered. Two were constructed at Mare Island, the *Chicago* and the *San Francisco*, the latter christened with a bottle of water from the recently completed Hetch Hetchy Dam. President Franklin D. Roosevelt gave a new impetus to naval shipbuilding in 1933 when he took office. The National Industrial Recovery Act provided for building cruisers and smaller vessels to treaty-permitted strengths. In March 1934, the Vinson-Trammell bill provided for the construction of 102 ships of all types, extending over eight years. During the period 1933 to 1941, the Navy replaced over 200 obsolete, flush-deck, World War I style destroyers.

Three destroyers, *Smith*, *Preston*, and *Hendley* were built and launched at Mare Island in 1936-1937. These vessels were designed and built for torpedo attack on the enemy fleet and defense of the battle fleet against similar enemy attack.⁷⁴

The United States entered the 1930s with a submarine fleet of some 120 boats mostly of the World War I R-class and the postwar S-class. By 1934 a submarine design of approximately 1500-tons emerged as the overwhelming preference of submarine officers, the technical bureaus, and the General Board. The success of the *Salmon* and *Sargo* design, reliable and habitable submarines with 17-knot surface speed and a minimum radius of 7500 miles, testified to the final consensus achieved by the Navy bureaus during the interwar period. The General Board's final recommendation to the Secretary of the Navy for the 1937 construction program recommended 1450-ton submarines of the *Salmon-Sargo* type. In recognition of the Navy's expertise in submarine technology and its substantial design and construction capabilities, the Navy Department assigned a portion of the newly authorized class to the naval shipyards at Portsmouth and Mare Island. The Mare Island shipyard constructed three submarines between 1936 and 1939 -- the *Pompano*, *Sturgeon*, and *Swordfish*.⁷⁵

Beginning in 1937 the Navy received authority to administer an accelerated construction program funded by New Deal recovery legislation and congressional budget appropriations. Portsmouth and Mare Island competed with naval vendors for construction contracts. Shortly after the *Sturgeon* was launched from Building Ways No. 1 in 1938, the Navy Department announced an award to Mare Island for construction of the first vessel designed as a submarine tender, the *Fulton*, and a ten-year construction program at the Navy Yard to build one submarine

⁷³ Rear Admiral R. W. King, USN, *Naval Engineering and American Sea Power* (Baltimore: The Nautical & Aviation Publishing Company, 1989), 142-157.

⁷⁴ E. B. Potter, *The United States and World Seapower* (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1955).

⁷⁵ Weir, *Submarines*, 42-43 and 103-109.

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each year and a tender every other year. The success and popularity of the new *Salmon-Sargo* submarine design set the stage for the mass production of submarines at the Portsmouth Naval Shipyard and Mare Island Naval Shipyard that commenced in 1940.

Beyond the shipyard, the major construction at Mare Island during this period occurred at the hospital. The main hospital building was built in 1901 and had been overcrowded ever since, especially in the years following World War I as the hospital continued to receive and care for the sick and wounded. Until the U.S. Naval Hospital at San Diego was opened in 1922, the Mare Island hospital accommodated a greater number of patients than any other naval hospital in the post-war period. In the early 1920s some 20 medical officers, a dentist, two pharmacists, 48 female nurses, and 174 hospital corpsmen were on duty at the hospital caring for an average of over 600 patients at any one time. During 1921, a total of 7335 patients were admitted to the hospital. Accommodation of these patients was achieved by continued use and additions to the temporary buildings erected at the hospital during the recent war.⁷⁶ At a cost in excess of \$366,000 the U. S. Naval Hospital began a program to modernize its facilities in 1926, including construction of a contagious and general hospital ward (Buildings H70 and H72), quarters for sick officers (Building H73), and a medical corps barracks (Building H71). The main hospital building was also expanded in 1928 with construction of a five-story, L-shaped, reinforced concrete wing, extending to the northwest. Expansion of these hospital facilities required installation of a separate heating plant near the hospital (Building H74) and an electrical substation (Building H75) to service the enlarged hospital complex. On the eve of World War II, construction began on a second major hospital wing on the southeast side of the old hospital that essentially duplicated the 1928 addition.⁷⁷

In summary, the post-World War I-era was one of disarmament. Building activity on Navy Yards virtually ceased after the reduction of arms conference of 1922. The Navy lost many skilled shipworkers. Employment at the Mare Island Naval Shipyard fell from 10,500 to a low of 2804 in 1925. Nevertheless, under a 1918 wartime appropriation Mare Island secured a modern shipbuilding plant. In the 1920s, Mare Island also obtained a submarine repair base, developed a radio communications center, almost doubled its effective size through reclamation of tidelands, and dramatically expanded and improved its facilities for assembling ordnance and storing high explosives. In the early 1930s, and increasingly after 1933, shipbuilding activities escalated at Mare Island and the other Navy yards.

5.a. Significance in Military History

Somewhat unexpectedly, the interwar period was among the most significant for Mare Island in the field of military history. Although military and political leaders generally pursued a course of international disarmament during these years, the Navy and the great fleet it assembled during World War I required major repair facilities

⁷⁶ *Annual Report of the Navy Department for the Year 1921*, 104-105.

⁷⁷ *Annual Report of the Navy Department for the Year 1925*, 9.

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as well as shipbuilding capabilities to replace those ships that could be replaced. Chief among these assignments was the research, design, construction and repair of submarines. German advances during the war had demonstrated unequivocally the importance of submarine warfare in defense of the surface fleet and as an attack craft. Throughout this period, Mare Island played an important role in all phases of the program to modernize the submarine fleet, from repair to existing submarines to research, development, and production of new submarines.

The industrial capacity of the base was substantially augmented through construction that was authorized during World War II but not completed until after the war. With these assets in place, the facility garnered important assignments, ranging from major ship repair work to testing of gunboat and destroyer design. These facilities, particularly Buildings 386-388-390 (essentially one huge structure), were key to development during this period and would continue to be the heart of the shipbuilding operation through World War II and into the Cold War era. Mare Island was designated a permanent submarine repair facility in 1925, beginning a tradition that would last through the Cold War. Mare Island made important contributions to submarine construction and design and would pave the way for even more important advances during World War II.

5.b. Significance in Industrial History

During this period -- indeed, throughout its history -- significance in industrial process and significance in military history are so closely intertwined as to be inseparable. The advances in shipbuilding and repair, particularly in the building and repair of submarines, made at Mare Island during this period constitute its significance in military history. These same developments constitute its significance in the area of industrial history.

5.c. Significance in Engineering and Architecture

The buildings constructed at Mare Island during this period are significant in the fields of architecture and engineering in two areas: in the design of massive curtain wall industrial buildings, ranking among the most substantial industrial buildings anywhere in California at the time; and in the introduction of the Mission Revival design to the hospital and other areas of the base. Although this was a relatively quiet period at Mare Island, a surprisingly large number of buildings from this period still remain. The high survival rate reflects the relative youth of these buildings as much as their status within the base. For the most part, buildings from this period are rather small and insignificant in terms of the mission of the base. The great exception to this is a group of buildings in the Shipyard South area, which established that area as the hub of shipbuilding and repair and formed the core of Navy activities at Mare Island during World War II as well as improvements to the hospital that helped establish the basis for its major role treating casualties during World War II.

As discussed below, the most important fact about new shipyard construction during this period is that it occurred in the Shipyard South area, not in the old shipyard. The reason was simple: the old shipyard was already

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occupied with buildings and the newest, most modern works were built on open land in the Shipyard South. Very few buildings from this period exist in the northern yards and the bulk of these are small sheds. The most notable exception is Building 273, built in 1921 as a radio laboratory. It is a reinforced concrete building, attributed to C.A. Carlson. The spandrels are of brick, dividing strips of industrial sash. Stylistically, it is very reminiscent of Carlson's buildings from the previous period, especially Building 271, and, as noted elsewhere, repeated a basic building type established nationwide by the Bureau of Yards and Docks during World War I.

The crucial fact about shipyard construction during this period is that new buildings were built south of the old yard, in the vicinity of Drydocks 2-4, which had been built late in the World War I period. The most significant structures from the period are Building 386, 388, and 390, essentially one large building near Drydock 3. It comprises a huge steel-framed curtain wall building, consistent in construction methods and architectural treatment with the buildings of Carl Carlson during the World War I era. The combined floor space is about 340,000 sf, with massive clear spans and roof heights for ship construction. The building plainly expresses its function as the shipbuilding core of the base and is highly significant as an example of 20th century factory design in addition to its obvious significance in the business of shipbuilding. These buildings established the viability of the southern shipyard. Because of this between-the-wars construction, a surprisingly little shipyard construction was necessary in this area during World War II. These 1920s and 1930s buildings formed the nucleus of the shipyard operations during World War II.

Construction in the hospital area during this period initiated an architectural anomaly that would extend throughout the base during this period and during World War II: the introduction of Spanish Colonial or Mission Revival architecture in a base that was predominantly neo-classical and American Colonial Revival. In truth, the base was already rather disjointed stylistically, owing to the different approaches to the different areas: neo-classical in the old shipyard, modern curtain wall construction in the new shipyard, Beaux Arts in the hospital area, Victorian in the Marine Corps residences, vernacular housing on Dublin Hill and in the Ammunition Depot. The effect of these many approaches was softened by the physical distances between the nodes of activity. New construction in the hospital area, however, juxtaposed different styles in the same area, even on the same building, to the extent that new construction was connected structurally with the old. In time, Spanish Colonial or Mission Revival buildings would proliferate throughout the base, dominating some areas. The Spanish Colonial/Mission Revival style was used most extensively in the hospital area, where Spanish Colonial buildings were attached to The Beaux Arts main hospital, Building H1. During the mid-1920s, the base undertook a major expansion of the hospital, transforming it into a major facility. At that time, the Bureau of Yards and Docks designed Buildings H72 and H80, bookend additions to H1, as well as Buildings H70, H71, and H73, freestanding but very similar buildings nearby. These large reinforced concrete buildings are understated in their use of Spanish Colonial Revival features but unmistakable as to the intent of the designers. The use of this style would soon spread to nearby buildings, most notably Building 926, the nearby Bachelor Officers' Quarters. The Spanish Colonial/Mission Revival buildings at Mare Island are individually handsome examples and are consistent

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stylistically with Naval facilities throughout California built during the inter-war years, including the Marine Corps Recruit Depot, San Diego and Naval Air Station, North Island, also in San Diego.⁷⁸

5.d. Significance in Archeology

Generally, archeological deposits and features that post-date World War I do not contribute to the significance of MINSY. They are from a well-documented period of time and are not unique. The exception is the 1920 Bay Model (F28). While overgrown and no longer operational, the archeological remains of the Bay Model are intact. Built in an attempt to impress members of a Congressional Committee with the suitability of MINSY as a shipyard, the model was created by Public Works officer Captain Leonard Cox in an effort to save the shipbuilding activities on base. It proved an effective visual aid that convinced Commission members to retain shipyard functions at MINSY. It played a unique role in the history of the base and is a contributing element to the NAD area under Criteria A and C for its engineering design and layout.⁷⁹

6. 1939-1945 -- World War II

World War II left an indelible mark on the economy of the American West. Between Pearl Harbor and V-J Day the economy of California and much of the region underwent a transformation as profound as any since the discovery of gold nearly a century earlier. The U.S. Navy was a central catalyst to this transformation. Heavily dependent upon raw materials production before 1941, the economy of the western states became increasingly diversified and self-sufficient. As a region the West benefitted from the nation's demand for raw materials, but the war also accelerated industrial development and reshaped the region's economic life. Military demands stimulated the establishment and expansion of manufacturing and industrial assembly plants. The war crisis also stimulated the new aerospace, electronics, atomic energy, and other "high-tech" industries in California, and in their wake, the state emerged from the war as an economic pace-setter for the nation.

The major influence in this transformation of the state's economy was the federal government, which poured at least \$40 billion into the West during wartime. Federal spending in California ballooned from \$1.3 billion in 1940 to \$8.5 billion in 1945. The value of California's manufactures tripled during the same period, increasing three times as fast as the national average. Federal money flowed into the state primarily through expansion of military bases, the establishment of new factories, and award of vast contracts for war materiel. A significant

⁷⁸ JRP Historical Consulting Services, "National Register of Historic Places, Historic District for the Marine Corps Recruit Depot, San Diego," February, 1990; JRP Historical Consulting Services, "Maintenance Plan for Historic Buildings and Structures, Naval Air Station, North Island, San Diego, California," April, 1995.

⁷⁹ Phone interview with MINSY Historian, Sue Lemmon, May 22, 1995.

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portion went directly into the aircraft and shipbuilding industries.⁸⁰ Mare Island Naval Shipyard underwent considerable expansion. The number of buildings in the Industrial Department alone increased from 323 buildings with a floor space of 1.6 million square feet to 525 buildings with square footage in excess of 2.8 million.⁸¹ The reshaping of the economy in California by war industries spurred other changes. The federal presence sparked the creation of hundreds of thousands of new jobs, which attracted men and women from all over the nation to California. The presence of more than a million military personnel did much to boost the state's economy.⁸²

Initial expansion of Navy Yards to meet the requirements of World War II began in 1938 when Congress voted to increase the size of the American fleet by 20 percent. At that time there were eight Navy Yards in the continental United States, all but one of which had been founded in the 19th century. They had undergone expansion and piecemeal improvement over the years in an attempt to keep pace with the modern requirements of shipbuilding, but the arrangement of the yards, their equipment, and building stock were not optimal to meet the production goals set by the Navy during World War II. Major funding for the construction and improvement of navy yards was initiated by a congressional approval of \$20 million for public works in 1938 in support of the fleet expansion bill. The following year, Congress appropriated an additional \$116 million for projects to improve existing yards. The need for more ships was impressed upon the American people after the fall of France. Beginning in June 1940, the United States inaugurated a national defense preparedness program, a major part of which included base expansion of the Navy. The "Two-Ocean Navy" bill passed in July 1940 authorizing a 75 percent expansion in tonnage of the Navy. This naval expansion program authorized building of 1,325,000 tons of combatant vessels. The defense program also increased many times the number of auxiliary, patrol, scout, and miscellaneous craft. Money to build the ships was released to the Bureau of Ships which in turn allotted funds to the Bureau of Yards and Docks to build the facilities to construct and repair the additional vessels.⁸³

Most of the shipbuilding and repair work funded in the months before the attack on Pearl Harbor concentrated on expansion of facilities at Navy yards. Captain Ben Moreell guided all Navy construction programs throughout the war. Previously the Commander of the Civil Engineer Corps at Pearl Harbor, Moreell was appointed chief

⁸⁰ James C. Fahey, *The Ships and Aircraft of the United States Fleet* (New York: Ships and Aircraft, 1942); Clinton H. Whitehurst, *The United States Shipbuilding Industry* (Annapolis: Naval Institute Press, 1986).

⁸¹ Commander, MINSY, "Wartime History," September 3, 1946.

⁸² Gerald D. Nash, *The American West Transformed: The Impact of the Second World War* (Bloomington: Indiana University Press, 1985), 17-37; Sterling J. Brubaker, "The Impact of Federal Government Activities on California's Economic Growth," Ph.D. diss. University of California, Berkeley (1959), 47-51, 155-168.

⁸³ *Building the Navy's Bases in World War II* (Washington: GPO, 1947), 169-172; Frederic C. Lane, *Ships for Victory* (Baltimore, The Johns Hopkins Press, 1951), 36-40.

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of the Bureau of Yards and Docks in December 1937 and he continued to oversee the Bureau until December 1945. Within the Bureau, the Department of Planning and Design prepared the basic drawings of most onshore projects. The officers of that department and others within the Bureau were drawn from the Civil Engineers Corps. From a close-knit group of 150 in 1940, the Corps grew to more than 10,000 by 1945, mostly civilian architects, engineers, and planners. But the Bureau of Planning and Design could only provide a small part of the design services for the program.

Many of the buildings erected on Mare Island during World War II were constructed as light woodframe temporary buildings. Their construction methods and their vast numbers reflect the emergency expansion of naval activities associated with the war. The highest concentration was near the north gate where ships barracks and housing for enlisted personnel were erected, and north of Cedar Avenue at the site of Quonset hut housing villages and the Naval Retraining Command. None of these remains intact.

Major groupings of World War II buildings of the more permanent type occur in all sections of the base, but most notably in three areas. The North End was transformed into a major ship assembly plant with huge warehouses, barracks, vast storage yards, shops, and building ways. The Shipyard South underwent a similar change with several of the major shops from the old shipyard relocating to this area into modern industrial shops, offices, and storehouses. These buildings are closely associated with repair of battle damaged vessels and construction of the larger warships and submarines built at Mare Island during and after the war. The waterfront in the Shipyard South region was also completely redesigned adding significantly to the docking and berthing capabilities of the shipyard. Finally, the Ammunition Depot continued to expand both its productive and storage capacities to handle huge quantities required by the war effort.

During World War II, much of the design and construction on Navy yards and stations was undertaken by private contractors operating under the direction of the Bureau. Seven times as many Navy contracts were awarded to private contractors by the Navy in World War II as in the previous war. The commandant of each naval base had wide discretion in making recommendations for new construction and in the selection of outside architects and engineers from an architect-engineer list compiled by the Bureau in cooperation with the American Society of Civil Engineers, the American Institute of Architects, and the Association of General Contractors. Austin Wilmott Earl, a San Francisco consulting civil engineer who had designed waterfront and harbor improvements at Mare Island after World War I, designed many of the major industrial buildings and waterfront improvements at the yard between 1939 and 1945.⁸⁴

During the interwar period the Navy Department had converted its Portsmouth Naval Shipyard into a state-of-the-art facility for submarine design and construction. The decision gave the Navy an alternative to a near private sector monopoly enjoyed by the Electric Boat Company. In 1938 Charles Edison, assistant Secretary of the

⁸⁴ Ben Moreell, "The Bureau of Yards and Docks," *The Military Engineer* 35 (July 1943); Chief of the Bureau of Yards and Docks to Commandant, 12th Naval District, December 13, 1941, RG 181, Letters Received, FARC, San Bruno.

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Navy, began laying plans to enhance the submarine building services at Mare Island in order to supplement the production capabilities of the Portsmouth shipyard and develop a similar proficiency on the West Coast. Many of the key production and industrial shops in the "Shipyard -- South" area were completed before December 7, 1941, such as the waterfront production shop buildings (Buildings 670, 672, and 674), the pattern shop (Building 676), the foundry (Building 678), the machine shop (Building 680) and the electric shop (Building 686). These buildings contributed materially to the rapid mobilization of the fleet, reactivating World War I destroyers and repairing foreign battle-damaged ships.

Actual war demanded ships in numbers far greater than the Navy could supply from its eight shipbuilding facilities. The Navy opened shipbuilding annexes and purchased some private yards, such as the one at Hunters Point to expand its capacity, but private shipbuilders of the nation also contributed to the build-up of naval forces. Shipbuilding had previously taken place in a craft-industry environment where corporate or naval officers and skilled workers prided themselves on product knowledge, quality, and individualized production. The result was a handcrafted vessel. The new shipbuilders of World War II came from the great building contractors of the era -- road, bridge and dam builders. In assembly-line mass production, construction engineers and managers used their organizational skills and their knowledge of production factors to turn out a product at record speed. The Pacific Coast shipbuilding industry was at the forefront of this revolution in shipbuilding. This change in style is well reflected in Mare Island's World War II-era shipbuilding facilities.⁸⁵

Mass production of destroyer escorts and landing craft was possible because they were relatively simple, unsophisticated machines. Skilled craftsmen and mechanics knowledgeable in the old procedures and high-tech equipment repair were still vital to the new order, but their numbers were far outreached by young unskilled workers, male and female, who came to the shipyard without any industrial work experience. Throughout Mare Island's shops unskilled or semi-skilled civilian employees became the backbone of wartime shipbuilding as a new industrial order was crafted onto the existing Mare Island Shipyard. Much of the work was not really shipbuilding, but was the manufacture of a standard-type ship. Mass produced ships were coming out of yards with revolutionary new designs, noted one plant engineer, "all laid out on the principle that the material flows through the structural shops, and from the structural shops flows to the assembly plants, and from there on down to the shipways." Pacific Coast shipbuilders, private and naval, produced 52 percent of the vessels built for the war effort. Mass production was their legacy to the American shipbuilding industry.⁸⁶

Management of the Mare Island shipyard was a complex matter, made even more so by the variety of military functions unrelated to shipbuilding that were located on the island. As with any manufacturing concern, materials

⁸⁵ James R. Chiles, "The Ships that Broke Hitler's Blockade," *Invention and Technology*, Winter 1988; Lott, *A Long Line of Ships*, 212-214; Lane, *Ships for Victory*, 138-172, 202-235; House Committee on Merchant Marine and Fisheries, *Hearings on Dry Dock Facilities on the West Coast*, 76:1 (1939), 19-23.

⁸⁶ House Sub-Committee on Production in Shipbuilding Plants, *Hearings*, Pt 3, 691-708.

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procurement, storage, and issuance were major concerns, especially with the scarcity of strategic materials in wartime. To meet the shipbuilding schedule, there was a need to accelerate the building rates on the shipways and improve drydock management. For shops to be used to full capacity, larger portions of submarines, for example, were prefabricated by welding together parts in a sub-assembly shop before being carried to the building ways. In turn, there was an increasing urgency to launch vessels in a lessened state of completion. Balancing the launching of new ships, outfitting of new vessels in the post-launch time of their lives, overhauling operating units, and repairing battle-damaged ships required a careful reexamination of operational concepts. The shipbuilding part of the yard and the repair part of the yard were in constant competition for drydock time. Expansion of waterfront docking, berthing, building ways, and mooring capabilities allowed the shipyard to operate at maximum capacity and to fulfill its shipbuilding and repair missions during the national emergency.

Prior to the wartime expansion, Mare Island had a usable area of approximately 635 acres. Waterfront repair and construction facilities included two drydocks, a third nearing completion, and two building ways at the center of the shipyard. By 1945, the yard covered an area of approximately 1500 acres, including a substantial tract of reclaimed land at the north end of the island, and contained four drydocks and eight shipbuilding ways. Drydock No. 3, completed in 1940, was the second largest at Mare Island. Drydock No. 4 was a smaller dock primarily used for submarines and destroyers. The new building ways were located in two areas. Ways No. 3 was at the south end of the shipyard; it was equipped with a marine railway and used primarily to drydock tugs, barges, and other small craft. Ways No. 4, 5, 6, 7, and 8 were built at the north end of the yard and used primarily in construction of destroyer escorts and landing craft. The yard also increased its number of berths from 15 in 1939 to 30 by the end of the war. The berthing areas, including the quay walls at the finger piers on the south end of the shipyard, were capable of berthing and working on 100 ships at one time.⁸⁷

Before the war, ships came to Mare Island for routine overhaul or alterations. As the war progressed, the work load increased and increasingly included repair of battle-damaged vessels. During World War II, Mare Island was one of the busiest shipyard repair facilities in the Navy. Two of the ships damaged at Pearl Harbor, the *Cassin* and *Downs*, were towed there for rebuilding. Over the course of the war, Mare Island developed a team of specialists who travelled out to sea to assess battle damages aboard ships and relay information to the shipyard where parts were prefabricated for installation before the damaged vessel was ever towed into the shipyard. During the war Mare Island repaired some 31 cruisers, 43 destroyer escorts, 84 submarines, 117 auxiliaries, 165 destroyers, nine aircraft carriers, 63 LSTs, and five LCTs.

Although the highest priority was given to repairing battle-damaged vessels, a tremendous amount of new construction was undertaken during the war at Mare Island. During World War II refined submarines and crude escort vessels and landing craft were the specialties of the shipyard. Its submarines collectively attested to their

⁸⁷ Commander, MINSY, "Wartime History," 1946

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quality by winning the greatest number of citations of any group of submarines constructed by any shipyard. The Mare Island Naval Shipyard constructed five submarine tenders, 19 submarines, two fuel oil barges, four seaplane wrecking derricks, seven floating workshops, 31 escort destroyers, three tank landing crafts, six water barges, 301 landing craft, and a 500-ton covered lighter during the war. The great majority of these ships were built between 1942 and 1944. At peak performance the yard produced one destroyer escort every ten days and one LCT each day.

In addition to repairing and building ships, Mare Island supported forces afloat and advance bases, and gave assistance to other shipyards. In normal times, all construction, prefabrication, and manufacturing was accomplished at Mare Island by its yard workers. During the war many commercial shops supplemented the Mare Island workforce to increase productive capacity with Mare Island assigning specialized work directly to these shops. However, Mare Island did manufacture many items required to outfit vessels, such as minesweeping gear, small wooden boats, wood and metal rigging blocks, rescue and safety equipment such as gas masks, clothing, oxygen tanks, and even hundreds of thousands of five-gallon paint buckets.⁸⁸

During World War I, employment at Mare Island had peaked at 9000. From a low of 2250 workers in 1925, the yard employed 6000 workers in early 1939 before the preparedness campaign hit full throttle. The yard's force steadily grew as the preparedness campaign got underway. The workload increased constantly and some 30,000 men and women were employed at Mare Island by the time the Japanese struck at Pearl Harbor. The figures climbed steeply from that point on, peaking at 41,053 in October 1945.⁸⁹ The problems of securing manpower to carry out its operations led Mare Island to conduct extensive recruiting activities across the entire nation. With the unprecedented development of private shipbuilding around San Francisco Bay, the surplus of workers was rapidly depleted. After the attack on Pearl Harbor, the manpower shortages became acute and were accentuated by the increasing demands of the Selective Service and by a severe housing shortage near shipyards. By the end of 1942, Mare Island had broadened its scope of recruiting to Denver, St. Louis, and New Orleans, providing bus transportation to anyone willing to accept employment. In May, 1943 the Civil Service Commission was charged with recruiting on a national basis for West Coast naval establishments. The influx of population to California by migration from other states during World War II was far in excess of that during World War I. Government policies prohibiting discrimination against employees because of race, creed, or color led to a mass migration of minorities, particularly blacks, to California during the war years.

As a result of the Civil Service Commission's efforts, many shipyard recruits came to Mare Island from Texas, Louisiana, and Colorado in the last half of 1943, once again swamping the local housing market. In late 1943 and 1944, a new recruit and transportation program embodying travel by rail and free meals enroute was initiated in four Midwestern and six Southern states. Before the end of the war, recruiters had traveled as far as Ohio,

⁸⁸ Commander MINSY, "Wartime History," 1946.

⁸⁹ *Mare Island Grapevine*, November 25, 1941 and February 20, 1942.

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Pennsylvania, New Jersey, and New York in their efforts to shore up manpower shortages in the California shipbuilding industry. During the war a total of 110,000 new employees were processed through the Mare Island Labor Board. In January 1946, some 9000 of Mare Island's 28,000 employees were recruits. As elsewhere in the West, many elected to stay in their adopted state.

During the war years, Mare Island tried to utilize the employment of as many women as possible. Many worked in non-traditional roles as woodworkers, welders, and mechanics in the various industrial shops. At the conclusion of hostilities, some 21 percent of the Mare Island workforce was women. Because they were not subject to the Selective Service Act, turnover among women was less than among men and their integration into the shipyard workforce was a major factor in the ultimate success in meeting wartime production goals. By 1942 the Navy was plundering its shore establishments of their most capable petty officers and other able-bodied servicemen. To replace them the Navy recruited and trained a corps of enlisted women, known as WAVES (Women Accepted for Volunteer Emergency Service). WAVES served in a variety of capacities and were especially visible in the Hospital Corps.⁹⁰

Railroad Lines at Mare Island

During World War II, Mare Island included a vast and complicated rail network to facilitate the transportation of material from building to building, from one area of the base to another, and to and from off-site facilities, some thousands of miles away. While rails had been used at Mare Island as early as the 1870s, it was during World War II that the rail system achieved its greatest degree of utility and complexity.

Railroad were used to transport material around Mare Island, beginning as early as the 1870s. To understand how the railroad operated there, four facts must be considered. First, the rail lines are now and have always been property of the U.S. Government and are not in any way associated with a major rail company. Second, until 1919, the railroad existed exclusively to transport goods from one part of the island to another; only with construction of a causeway to the mainland in 1919 was it possible to use the railroad to carry good to and from the island. Third, the lines were constantly changing with the functional relationships among industrial facilities on the island. As the major ship construction buildings moved south on the island during the 1920s, for example, the tracks moved south with them and the old tracks in the Shipyard North were realigned. Fourth, rail mileage at Mare Island peaked during World War II and has declined since. Railroad mileage today is likely less than 1/4 of what existed there in 1945.

⁹⁰ Kathleen C. Doyle, *Californians: Who, Whence, Whither* (Los Angeles, 1956); Mel Scott, *The San Francisco Bay Area: A Metropolis in Perspective* (Berkeley, 1965); Command File World War II, "History of Mare Island Navy Yard in World War II, Part V: Labor and Management," 1-3.

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The earliest use of railroads on the island appears to have been a small narrow gauge line used to haul ordnance from the magazine wharf to the magazines that existed at that time, chiefly Buildings A1 and A20.⁹¹ In 1874, another small (presumably narrow gauge) line existed within the Shipyard North area as well, connecting the oldest of the shipyard buildings there.⁹² The railroad trackage had increased only slightly by the turn of the century. In 1902, two small groups of tracks existed on the island: the very short line in the Ammunition Depot Area and a somewhat expanded line in the Shipyard North.⁹³ By 1914, both sets of railroad lines had been expanded substantially, the Ammunition Depot line lengthened to include a loop to serve new magazines to the west, the Shipyard North line expanded to serve buildings in the vicinity of Drydock No. 2.⁹⁴

In 1919, the first causeway was built connecting the mainland with Mare Island. Construction of this causeway coincided with a period of tremendous expansion at the base. The expansion of base facilities proceeded both north and south of the old shipyard, into what is herein called the Shipyard South as well as into the fill lands in the North End. Further expansion was made in the Ammunition Depot, expanding the track to serve the magazines along the south end of the island. New lines were built into the back side (west) of the Ammunition Depot, allowing munitions shipments to be made by rail, bypassing the built up sections of the base. The causeway was relocated in 1935, forcing relocation of much of this trackage. By 1945, then, the railroad system bore essentially no resemblance to its appearance before that time.

As noted, the situation in 1945 represented the high point in railroad mileage at Mare Island; never before or since has the railroad played such a key role there. A brief summary of the railroad line as it existed in 1945 may be used to compare what it existed at that time with what existed today.

In 1945, the Ammunition Depot area was served from two directions; from a complex web of rails on the eastern island, serving the large industrial buildings, a line which extended from the Shipyard South; and a line that approached the Ammunition Depot from the west, via A Street, serving the west side magazines, hilltop magazines, as well as the magazines on the south end of the island. This track has all been removed.

The Hospital, Marine Corps, and Residential-Administrative areas historically had little need for railroad tracks. In the Hospital area, there were no tracks in 1945 and are none today. The Marine Corps Area was served

⁹¹PAR Environmental Services, "Cultural Resource Monitoring and Site Evaluation for the Saltwater Fire Suppression System, Mare Island Naval Shipyard, Vallejo, Solano County, California," 1994: 70.

⁹²"Plan of the U.S. Navy Yard, Mare Island, California," June 10, 1874.

⁹³ "Plan of U.S. Navy Yards, Mare Island," July 1, 1902. Lott, 134.

⁹⁴"Plan of U.S. Navy Yards, Mare Island, California," July 1914. Lott contends that four miles of track had been laid on the island during World War I. Lott, 165.

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indirectly in 1945 by a loop of track that crossed on the west side of the island, designed primarily to serve the Ammunition Depot. That track has been removed. The Residential-Administrative Area was adjacent to the Railroad Avenue tracks historically and at present.

The Shipyard South was in 1945 served by a complicated web of tracks that connected the various buildings to one another and to the main trunk lines. The web of tracks no doubt changed throughout the war as building functions changed and the need arose to haul material from one building to the next. Individual buildings often included multiple tracks, entering from one side and exiting from another. The huge Building 680, for example, included two tracks entering from the east and two tracks from the west. These fed into a maze of tracks that connected to Building 740 (which no longer exists), which had three tracks entering from one side, and to other large buildings in the vicinity. In addition to these small spurs to individual buildings, the railroad system included tracks that proceeded around the periphery of the buildings and functional areas, connecting ultimately with the main line along Railroad Avenue.

What exists today is a skeletal image of what existed 50 years ago. The main line exists along Railroad Avenue, although this track has been replaced many times since 1945. There exist as well some of the track that ran around the periphery of buildings and functional areas. Essentially all of the tracks that served individual buildings have been removed.

The situation was even more complicated in 1945 in the Shipyard North, which was occupied by much smaller buildings and required correspondingly more complex track alignments to connect the buildings with each other. An example is Building 106, the "Boat Shop," one of the larger buildings in the Shipyard North. It was connected on the south by two tracks and on the north by one, the southern track feeding into a system that served the drydocks, the northern track connecting with the Railroad Avenue mainline. The situation was much the same throughout the area. The complex of connected buildings that includes number 85, 91, and 271 was served by at least five tracks, three from the south, connecting with track along the quay, one from the west, and one from the east.

As with the Shipyard South, what exists today in the Shipyard North is a shell of the 1945 system. The main line exists along Railroad Avenue, although this track has been replaced many times since 1945. There exist as well some of the track that ran around the periphery of buildings and functional areas. Some track still exists along the quay wall. Essentially all of the tracks that served individual buildings have been removed. The North End was served by a web of tracks that rivalled that in the Shipyard South and Shipyard North in terms of complexity in interconnections. Essentially all of this track has been removed.

As discussed with respect to different areas of the base, the bulk of the rail system that existed at Mare Island in 1945 has been removed. The removal followed a policy of the base to remove track that was not needed or to upgrade such track as was needed. The track that remains at Mare Island follows, in most instances, the

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alignment that was in use in 1945.⁹⁵ The track has been almost entirely ungraded since 1945, however, chiefly through replacement of lighter gauge rail (less than 100#) with more modern rails, all of 100# or greater.⁹⁶ The major trunk lines, such as that along Railroad Avenue, have been replaced on several occasions since 1945.⁹⁷

Whether considered as a system (which it was), or as individual stretches of track, the railroad system at Mare Island does not retain integrity to its appearance during World War II or at any other period prior to 1945. For this reason, the rail system at Mare Island is not considered a contributing element of this historic district.

6.a. Significance in Military History

In terms of its contribution to the nation's defense, the Mare Island Historic District achieved its greatest significance during World War II. Although it excelled in certain areas, particularly the repair of battle-damaged ships and construction of submarines, the base contributed to the war effort on many fronts. It was this coordination of efforts on many fronts that characterizes and defines the significance of Mare Island during this period.

Mare Island was part of a vast machine that included all of the other naval yards, private shipbuilders, and other naval facilities. Mare Island had developed various useful improvements over the years, most especially the dozens of large shop buildings and specialized equipment and training, but also the hospital, the ammunition depot, and the Marine detachment. All were put to use at breakneck speed during the war. The old shipyard (Shipyard North) was involved chiefly in repair work on damaged crafts. The southern shipyard, with a collection of very large shop buildings from the 1920s as well as new buildings from the late 1930s and 1940s, was used in the construction of new vessels, chiefly submarines. The distinction between functions is misleading, however, because the multiplicity of shops worked in a coordinated fashion on both repair and construction assignments. The ammunition depot was arguably the busiest part of the base during these years, with vast responsibilities for temporary storage of ordnance, manufacture of certain specialized ordnance, and repair of ordnance. In addition, the facility at Mare Island retained jurisdiction for far-flung weapon stations, from elsewhere in the Bay Area to Hawthorne, Nevada. The hospital was assigned specialized duties, chiefly in treatment of mental illness and in prosthesis work. The Marines' work remained what it had always been -- guarding the island, particularly the ammunition depot -- but its responsibilities increased with the vast increase in activity at the base.

⁹⁵ This fact was established by comparing conditions maps from 1945 and 1993. It should be noted, however, that many miles of track have been removed since 1993, particularly in the Ammunition Depot. The basic facts regarding the track at Mare Island are maintained on "track" charts in the civil engineering section.

⁹⁶ Conversation with George Young, civil engineering, Mare Island Naval Shipyard, October 16, 1995.

⁹⁷ Conversation with Frank Johnson, Mare Island Naval Shipyard, October 12, 1995.

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The Mare Island contribution to the war is commonly expressed in terms of individualized efforts, most commonly its role in submarine repair and construction, an effort that would continue well into the Cold War era. While true, these individualized achievements mislead in terms of the way the base functioned at the time. Its many assets, not limited to the shipyard, were put into service and collectively made a major contribution to the success of naval operations in the Pacific Theater.

6.b. Significance in Industrial History

The Mare Island Historic District achieved significance in industrial history during this period as a major participant in the mass production methods that characterized shipbuilding and other military construction and repair during this period. During World War II, production and repair work at Mare Island fell into two basic categories: the traditional crafts-dominated work through which essentially "hand-crafted" products were made; and assembly-line production through which prefabricated pieces were assembled quickly and thrown into action. Mare Island participated in both, with the more patient, crafts-oriented work reserved for repair of large battle-damaged ships and manufacture of submarines, and the mass assembly-line work reserved for smaller crafts. The distinction was not always clear. Even submarine construction involved assembly of many prefabricated pieces shipped to Mare Island from distant vendors. Even smaller crafts, such as landing crafts, involved skilled labor at key points of the production. For the most part, however, the distinction held, with mass assembly of landing crafts occurring at the North End (much in area outside this historic district) and the more intricate craft assembly occurring in the southern part of the shipyard. The more labor-intensive repair work also occurred in the southern part of the shipyard.

6.c. Significance in Engineering and Architecture

The buildings and structures from World War II are generally the least significant among Mare Island properties in the areas of architecture and engineering. While hundreds of buildings remain from this period, the vast majority are support buildings (bomb shelters, electrical substations, and so forth) or are mass-produced housing units and barracks. These properties are significant only within the limited context of World War II-era buildings. Unmodified World War II-era buildings are increasingly rare because the vast majority were "temporary" buildings, unable to last without being substantially upgraded. Mare Island is unusual in that a large percentage of the World War II era buildings were of a permanent construction. More specifically, the buildings that have survived were of a permanent construction; hundreds of temporary buildings were constructed there during World War II but were torn down shortly after the war. The surviving buildings and structures from this period collectively represent a very important collection of buildings from this period, arranged in a manner that enables an understanding of how the base functioned at the time.

Over half the contributing buildings in the Mare Island Historic District date to this period. The remarkable fact about the World War II effort, however, is not that it resulted in massive new construction -- it did -- but that, to a very large degree, it was accomplished through re-use of earlier buildings. While literally hundreds of

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buildings remain from the 1939-45 era, the overwhelming majority of these are incidental or support buildings. There are, to be certain, large shipyard buildings from this period as well as major hospital buildings, barracks, administrative buildings, and so forth. Most of the major operational aspects of the war effort, however, took place in buildings constructed prior to 1939. Another pattern characterizes construction during the war: the use of private architects and engineers to design major buildings while the Bureau of Yards and Docks confined its design activities to the specifically military building types with which it had greatest experience, such as bomb shelters, ammunition magazines, tool sheds, and so forth. A third pattern that characterized construction during the war was dispersal of buildings to previously-unoccupied areas of the base. Industrial buildings were concentrated in the southern part of the shipyard, where some substantial construction had occurred during the 1920s and 1930s. Warehousing and troop billeting was concentrated in various areas, particularly north of the causeway. New administrative buildings were constructed at various locales, including the old administrative area and the north end. A fourth pattern is a shift in about 1942 from the construction of "permanent" to "temporary" buildings. The distinction is somewhat artificial, since many so-called temporary buildings are still in place and usable. The distinction was meaningful to planners at the time, however, with permanent buildings being built of long-lasting materials, usually concrete, and temporary buildings of a rather "skimpy construction," in the words of the assistant chief of the Bureau of Yards and Docks, almost always of wood.⁹⁸

During the war, the shipyard grew to include virtually all of the eastern waterfront between the causeway and the ammunition depot. The big shipyard buildings of the period can be characterized with reference to a substantial number designed by San Francisco architect, Austin Willmott Earl. Earl was involved in engineering and architectural work at Mare Island between 1917 and his death in 1965, nearly half a century of work there. Earl was born in Ontario Province, Canada in 1880 but studied engineering at the University of California, graduating in 1906. He worked for private engineering firms between 1906 and 1917, chiefly based in Los Angeles. In 1917, he was hired as a supervising engineer at Mare Island, specializing in the design of seawalls and harbor installations, although he is the designer of record of several buildings from this period as well. After the war, Earl went to work for Alameda County (1923-25) and a Canadian engineering firm (1925-32). In 1932, he established a consulting engineering business in San Francisco, in partnership with Henry Dewell (1932-40), on his own (1940-50), and in the partnership of Earl & Wright (1950-1965). Mare Island includes buildings designed by Earl as a civil servant during World War I, as Austin Willmott Earl, consulting engineer during World War II, and by the firm of Earl & Wright during the post-war years.

The most numerous of these, however, are the World War II buildings. Earl was apparently active in designing buildings for the Bureau of Yards and Docks throughout the United States; he was awarded a Civilian Merit Award at the end of the war for his service to the Navy.⁹⁹ Earl's firm was an architectural-engineering contractor

⁹⁸ Lewis B. Combs, "Functions of the Civil Engineer Corps in the Naval Establishment," *Civil Engineering* (Vol 12, No 6, June 1942), 320-323; Garner, 1993.

⁹⁹ Obituary, *Transactions of the ASCE* (Vol. 131, 1996), 894-5; *San Francisco Chronicle*, February 22, 1965, 25:1.

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to the U.S. Navy; the bulk of Navy-built large structures during World War II were designed by private firms.¹⁰⁰ Earl's firm was especially active in designing buildings at Mare Island during the war, probably more active than any other private firm. He is known to have designed at least ten buildings there and may have done even more work. The largest building to his credit is Building 742 in the southern shipyard area, a reinforced concrete building of about 150,000 sf. It was built as an ordnance machine shop. In its general appearance, it resembles most closely the curtain wall concrete buildings of Carl Carlson from the World War I era. Building 688 is also credited to Earl. It is an adjunct structure to the huge Building 680, a 1940 machine shop for the submarine construction yards. Building 688 is so similar in appearance to Building 680 and to Building 742 as well that it is likely Earl was also involved in its design. In the southern shipyards, Earl designed a 36,000 sf addition to the big ship assembly building, Buildings 386-388-390, a 340,000 sf building constructed during the 1920s. Earl's design of reinforced concrete with metal siding is generally consistent with the curtain wall design of the earlier building. In the main northern shipyard, Earl designed a reinforced concrete galvanizing plant in the vicinity of the Rousseau-designed 1904 Buildings 114 and 118. Earl's modern concrete design made no concession to the brick Classical Revival detail of the earlier buildings.

Dozens of other World War II-era buildings exist in the shipyard area. Many are very large buildings, such as Building 280, a 257,000 sf foundry built in 1940, apparently designed by the Bureau of Yards and Docks. Its design mimics closely the mold established in 1918 by Carl Carlson's curtain wall buildings. The more typical buildings, however, are ancillary buildings -- tool sheds, cafeterias, and the like. These buildings appear to have been designed principally by the government and with little attention to architectural detail or conformity with any previous generation of design at the base.

World War II buildings outside the shipyard are generally small and unexceptional. Whether temporary or permanent, the residential and administrative buildings at the base were built quickly, generally without an effort to conform with the context or achieve individual distinction. Rare exceptions exist. The most important construction occurred in the vicinity of Building 47, as the command structure expanded and required new administrative space. The principal building from this period in this area is Building 521, a 77,000 sf L-shaped office building that wraps around Building 47. Designed by Austin Willmott Earl, it is an interesting transitional building, designed to conform with Building 47 while expressing the sensibilities of the early 1940s. It is a three-story reinforced concrete building with a shallow hipped roof, hidden behind a parapet that makes the building appear to be flat-roofed. The building is faced in red bricks, an obvious concession to its site adjacent to Building 47. Aside from the bricks, however, Building 521 is a decidedly Streamlined Moderne composition. Entry is gained through a series of curving door surrounds, each capped by a sweeping incised concrete canopy. Windows are bands of steel sash, painted a green that now matches the patina on the copper rainwater leaders.

¹⁰⁰ J.J. Manning, "Work of the Civil Engineer Corps of the Navy," *Civil Engineering* 12,2, February 1942: 73-76.

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7. Consideration of Exceptional Significance for Post-1945 Buildings, Structures, and Sites at Mare Island

Post-World War II properties at Mare Island were considered for inclusion as part of this historic district but were not included because the case for exceptional significance could not be established and linked firmly to individual buildings, structures, or sites built after 1945.

There are two reasons to consider exceptional significance for properties at Mare Island, as with all bases active during the Cold War years. First, military installations, like all other properties, may be listed in the National Register if shown to be exceptionally significant.¹⁰¹ In addition, Department of Defense (DoD) installations are under a specific legislative mandate to consider the significance of military properties associated with the Cold War. The legislative mandate and DoD approaches to it are summarized in the publication *Coming in from the Cold*.¹⁰² While the Cold War mandate explicitly directs DoD agencies to consider significance of its properties, the general rules regarding exceptional significance apply to DoD properties that are less than 50 years old, as they do to all other properties. The potential eligibility for Cold War properties, then, must be established according to National Park Service guidelines but within the specific context of military developments associated with the Cold War.

In considering potential significance for Cold War properties at Mare Island, it is concluded that no effective case for exceptional significance may be made and assigned to specific properties constructed after 1945. The most compelling case for exceptional significance at Mare Island relates to the role of the base in the maintenance and, to a lesser degree, construction of the American nuclear submarine fleet. Nuclear submarine repair and construction took place in the shipyard area -- the areas herein called Shipyard North and Shipyard South -- almost exclusively in buildings left vacant through abandonment of the shipbuilding and repair functions at the base after 1945. If exceptional events occurred at Mare Island, they occurred almost exclusively in buildings that were built before 1946, buildings that are identified as contributing elements of this historic district on the basis of significance in World War II or earlier eras.

For three reasons, it is difficult to assign to specific buildings a role in nuclear submarine repair and construction. First, the information regarding this function is not publicly available. Any association between individual buildings and specific elements of the nuclear submarine program can be established only on the basis of

¹⁰¹ National Register Bulletin 22, "Guidelines for Evaluating and Nominating Properties that Have Achieved Significance within the Last Fifty Years," n.d.

¹⁰² Department of Defense Legacy Cold War Project, *Coming in from the Cold: Military Heritage in the Cold War*. Washington DC, June 1994.

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conjecture, not proof. Second, it is known that the program was dispersed among many buildings in the shipyard area. The program was built around many shop functions and was not centralized in only a few buildings. It is likely that dozens of older buildings there participated at one time or another in activities related to the nuclear submarine program. Third, it is known that these functions changed over time, even during the Cold War era. The Cold War nuclear program continued a long tradition at Mare Island of re-using shop buildings that were built for an obsolete purpose. It is likely, for example, that some of the very old industrial buildings, buildings constructed during the sailing ship era, participated at one time or another, in the nuclear submarine program.

Thus, while there may be a case for exceptional significance in the general function at Mare Island -- nuclear submarine repair and maintenance -- the activities may not be ascribed to individual buildings and, in any event, occurred in buildings that are already identified as contributing elements of this historic district in the context of a period of significance that extends through World War II. The case for exceptional significance is difficult to establish with respect to individual buildings and would not modify the list of contributing properties within the district. For these reasons, the period of significance has been maintained only through the year 1945.

For Mare Island, the Cold War-era was both a period of expansion and retrenchment. Some facilities, such as the hospital and prison, closed altogether, and other facilities, such as the Marines detachment, were scaled back. The shipbuilding function, the heart of Mare Island's operation since the early 20th century, essentially disappeared. Other functions, however, increased considerably, including the repair of nuclear submarines and key training functions. On balance, the Cold War meant for Mare Island a fundamental retrenchment from World War II, including a decline in personnel from 40,000 to about 10,000. Nonetheless, it remained an important facility in certain key areas.

In the years after 1945, Mare Island was assigned an important role in developing various specialized submarines. These included conversion of fleet submarines to submersible oil tankers, troop carriers, and missile launching platforms. Two new construction units known as "killer" submarines were also built at Mare Island during the early 1950s. Much of this technology was subsequently added into fleet submarines as part of the Greater Underwater Propulsion Power (GUPPY) conversion program. The need to update the U.S. submarine fleet could not await the evolution and construction of a totally new design. The GUPPY reconstruction program's primary aim was to increase battery capacity and streamline the superstructure to increase underwater speed. This early Cold War submarine work, Mare Island's reputation as the West Coast's submarine shipyard, and a growing emphasis on the submarine by the Navy appear responsible for Mare Island's evolution during the Cold War into a nearly exclusive submarine shipyard.¹⁰³

¹⁰³ Paul B. Ryan, *First Line of Defense: The U.S. Navy since 1945* (Stanford, CA: Hoover Institution Press, 1981).

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No single development of the Cold War played such a defining role for Mare Island as the development of the nuclear submarine.¹⁰⁴ Previous technological advances, including advances in metals technologies, had already offered the potential for sustained operations at depths and for periods of time previously thought impossible. It was the advent of nuclear propulsion, however, that changed fundamentally the operation of the American submarine fleet and necessitated organizational and manufacturing techniques beyond any experienced in any previous period in submarine design. The sinking of the nuclear submarine *Thresher* likely affected Mare Island's shipyard as much as any other single event of the Cold War. A "class leader" in Naval parlance, the *Thresher* represented the ultimate in submarine warfare capability.¹⁰⁵ Accordingly, the loss of such a ship with all hands stimulated a Navy-wide investigation that brought major changes in design concepts and fabrication processes to all aspects of submarine construction and repair. Its immediate effect on Mare Island was the delay of two *Thresher*-class ships under construction at Mare Island. The more long-range, resultant changes in procedures and processes further shaped needs in work force and shop capabilities. One local outcome of all this was the development at Mare Island of an "induction brazing" process that improved the silver brazing method of joining seawater systems piping.

In addition to its work on "fast attack" nuclear submarines, Mare Island was one of four such facilities that have produced nuclear powered strategic ballistic missile submarines (SSBN). (Earlier, Mare Island personnel had built the guided missile submarines *Grayback* and *Halibut*, the latter being the Navy's first nuclear powered, guided missile unit.) The first 41 SSBNs were capable of carrying 16 Polaris (later Poseidon and early Trident) ballistic missiles in vertical launch tubes. Only one of these survives, the *Mariano G. Vallejo*, but is awaiting scraping at Puget Sound Naval Shipyard in accordance with a disarmament treaty with the former Soviet Union. Of the many launchings and other ceremonial activities at Mare Island, none attracted the public attention or matched the air of celebration of "Vallejo's Greatest Day," the launching of the *Vallejo*.

Mare Island's shipbuilding or ship repair capability was not devoted solely to the submarine forces. Closely related to other submarine work, Mare Island also served as the home shipyard for units involved in "ocean engineering" or "deep ocean systems" projects, a significant effort in the shipyard's history, although withheld from public examination by security classification. In a related development, Mare Island personnel were involved in the conversion of the Deep Submergence Vehicle Sea Cliff's pressure sphere to titanium, a significant design and engineering feat of its day. Other ship work from this period included the repair and overhaul of surface combatants varying from the construction of wooden-hulled minesweepers to the refueling overhaul of the nuclear powered cruiser (then destroyer) *Bainbridge*.

¹⁰⁴ Richard G. Hewlett and Francis Duncan, *Nuclear Navy 1946-1962* (Chicago: University of Chicago Press, 1974).

¹⁰⁵ John Bentley, *The Thresher Disaster: The Most Tragic Dive in Submarine History* (Garden City, N.Y.: Doubleday and Co., Inc., 1974); "Loss of the U.S. S. Thresher: Hearings before the Joint Committee on Atomic Energy," Congress of the United States, Eighty-eighth Congress, First and Second Sessions on the Loss of the U.S.S. Thresher, June 16, 27, July 23, 1963, and July 1, 1964. Washington: Government Printing Office, 1965.

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The conversion from ship repair to nuclear submarine repair necessitated modification of older shipyard buildings, as well as construction of some new buildings, chiefly in the Shipyard South area. While post-1945 buildings account for a very large percentage of the total number of structures at Mare Island, the bulk of these more recent buildings are of a "temporary" nature, as with dozens of prefabricated metal buildings, including "Wonder Arches," scattered throughout the shipyard area, or are suburban-style residential units in the old Marine Corps area. The most substantial work accomplished at the base during the post-war era occurred in buildings constructed prior to 1945.

During this period, the old shipyard was refitted for use in the construction and repair of nuclear submarines. The bulk of this activity took place within existing buildings, often with very little modification to their exteriors. Interior modifications were substantial, as has been the case throughout the long history of the shops at Mare Island. For example, Building 106A, a 1918 shop building, was retrofitted in 1957 to handle the installation of canvas to submarine pipes to silence them. New construction predominantly took the form of temporary buildings, scattered throughout the area, such as Buildings 117, 120, and 124. This area was also used as office facilities for private firms that contracted with the Navy in construction and maintenance of nuclear submarines, including Westinghouse Bettis, General Electric's Knoll Atomic Power Laboratory, and the Naval Reactors Representative of the Energy Department. The oldest buildings in the Shipyard North were ingeniously re-used for purposes to which their areas could accommodate. The old coal bins were generally re-used for office space. Building 69, 71, and 215 were re-used for testing purposes. The remarkable fact about this area and the southern shipyard is the degree to which older buildings -- in some cases, very old buildings -- were amenable to re-use for entirely new purposes. This fact has to do with the nature of industrial operations at Mare Island, which could be broken into small tasks and fitted into a variety of buildings. The facility possessed ample very large spaces as well for those activities that required such spaces. The same pattern held for the southern shipyard, where buildings were re-used in the repair and maintenance of nuclear submarines without the need for massive new construction in the area. Notable exceptions exist, including Building 112, a 164,914 sf shop, built in 1981, and Building 1310, a 105,000 sf sheetmetal shop, completed in 1973.

Beyond the shipyard, the trend at Mare Island was toward abandonment of historic functions and only partial re-use of historic buildings. The Ammunition Depot was deactivated in the 1950s, its function shifted to the Naval Weapons Station, Concord. A few buildings in the area were re-used for other purposes, including establishment of a Coast Guard station. A small number of magazines were used for explosive storage and specialized purposes by the Concord facility. Parts of the Ammunition Depot area was used as well for training of riverboat crews during the Vietnam conflict. This use was short-lived. The hospital area was reduced in capability and patient load drastically following World War II in favor of the much newer Oak Knoll facility in Oakland. The Navy announced its intent to close the facility in 1950 and closure was completed in 1958. Little by little, the vacant buildings were re-used by the Navy Schools Command, an instructional facility oriented toward training personnel in the field of surface ship guided missile systems. The area occupied by the former hospital has been the home of the Naval Schools Command, Mare Island throughout the bulk of the Cold War era. As with many of Mare Island's tenant and component commands several other variations of the name have applied to this

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state-of-the-art electronics training facility. The Schools Command, in turn, housed various tenant schools over its life, such as the Engineering Duty Only (EDO) Officer School. The Marine barracks area was occupied by Marines throughout the Cold War era, although the force level decreased dramatically after World War II. The residential and administrative area continued to be used for its original purposes throughout the Cold War era. The north end of the island was largely abandoned after World War II. This area had been an extremely active area during World War II. The area had been occupied by large industrial operations as well as substantial housing complexes. The two biggest housing complexes, Saipan Village and Guadacanal Village, were demolished in the 1960s. One continuing involvement at the North End was the U.S. Nuclear Power School. The late 1950s represent a period of tremendous expansion in the application of nuclear power as the means of propulsion in Navy ships. Abandoned buildings at Mare Island and the Naval Training Center at Bainbridge, Maryland were pressed into service as the "campuses" of two new nuclear power schools for all surface ship and submarine nuclear propulsion plant operators.¹⁰⁶ The Mare Island school opened in December 1958 in Building 755. It offered a basic (enlisted) and advanced (commissioned officer) training program.

¹⁰⁶ "12th Naval Command History, U.S. Naval Nuclear Power School: The Establishment of the U.S. Naval Nuclear Power School, 1958," RG 181, NARA, San Bruno, 392.

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Plan of U.S. Navy Yard, Mare Island, 1913.

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February 7, 1995.

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VERBAL BOUNDARY DESCRIPTION

The boundary begins at corner of Causeway Street and Cedar Avenue. Proceed south along the east side of Cedar Avenue to A Street. Continues along Cedar Avenue to Building 781. Proceed west along the north side of Buildings 781 and 433. Proceed south and east around Building 433, then south along the west side of Building 511, along an unimproved road to its intersection with Tisdale Drive. Proceed east on Tisdale to a fenceline at the rear of Building 106A. Follow that fenceline west to a plane that aligns with the rear of Building 737. Proceed south along the rear of Building 737 to a fenceline south of it, then along that fenceline east to the intersection with Cedar Avenue.

Proceed south on Cedar Avenue to Ninth Street, then west on Ninth Avenue to Madrone Avenue, and south on Madrone to its cul-de-sac. Proceed south from the cul-de-sac a short distance to a fenceline. Follow that fenceline west around Building M169, continuing west along the fence to the eastern edge of Building 1244. Proceed due south to Mesa Road, passing through the driveway for Building 1244. Proceed northeast along Mesa a short distance to its intersection with Petaluma Avenue. Proceed south on Petaluma to its intersection with San Pablo Avenue. Proceed west along San Pablo to its intersection with Mesa Road. Proceed south along Mesa Road to an unnamed alley that extends behind the garages for Building M2, M3/M4, and M5. Follow east along this alley to its intersection with Wahoo Avenue, then north along Wahoo to Preston Avenue. Proceed east on Preston to Sargo Avenue, then north on Sargo to 13th Street. Proceed east on 13th Street to the sidewalk that is about 30' west of Cedar Avenue. Follow that sidewalk south to the northern fenceline of Building H5.

Follow the fenceline east and then south behind Buildings H5, H4 and H64. The boundary then follows a steep bank that separates duplexes 1034, 1036, 1040 and 1044 from the park along Club Drive. The intent at this point is to include the park and exclude the duplexes. The boundary follow this steep bank to a point at the northwest corner of the fence that surrounds Building 923. The boundary follows this fence to its intersection with Eucalyptus Trail. The boundary proceeds downhill on the Eucalyptus Trail to the north edge of a large parking lot, east along the north edge of that parking lot to the intersection with Club Drive. Proceed along Club Drive to the parking lot for Building 396, the officers' club. Proceed along the north edge of this parking lot to a stairway, identified as Facility 445. Proceed north along the stairway to the rear (south) of Building 926.

The boundary then follows an arbitrary line that proceeds due east between the eastern edge of Building 926 and the southwestern corner of Building H-86. The boundary follows to the south along a line identified as "toe of slope" in Mare Island "Map of Naval Activities," October 1993. It proceeds along the toe of slope to a point due north of the terminus of an unnamed access road; this terminus is due east of Building A214.

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From this terminus, the boundary proceed due east to the northeastern edge of the reservoir in the center of the base golf course. It proceeds along the northern edge of the reservoir, then due north to a fenceline that surrounds Buildings A207, A208, and A209. It follows that perimeter fence to the north, west, south, east and north again to the point at which the fence intersects a railroad access road to Buildings A207, A208, and A209. It proceeds southeast on that railroad line to its intersection with Mesa Road. The boundary proceeds along Mesa Road to the south, west, and then north. It then proceeds north along Mesa Road to its intersection with Young Drive. From the intersection with Young Drive, the boundary follows an arbitrary line due west a short distance to Charlton Road. It proceeds south on Charlton a short distance to its intersection with Weyraugh Road. It proceeds north on Weyraugh Road to its intersection with Ribiero Road. From The intersection of Weyraugh Road and Ribiero Road, the boundary follows the fence behind Building A181.

From this point, the boundary follows the perimeter fence south behind Buildings A181, A182, A183, A184, A185, A186 and A180, then proceeds along the fence line to the southeast behind Building A169. It proceeds along this perimeter fence to Pier 35. The boundary includes Pier 35. At the northeast corner of the pier, the boundary follows the shoreline east to Pier 34. The boundary includes Pier 34. To the east of Pier 34, the boundary turns to the north. It proceeds northerly, retaining an arbitrary 100' distance to the east of the shoreline; this 100' represents an archaeological buffer. This 100' buffer is retained past the finger piers and along the full length of the quay line to the causeway. The boundary then extends along the south side of the causeway to its eastern abutment. The boundary proceeds north along the eastern abutment, then west along the north side of the causeway to Building 491. The boundary line extends along the north side of Building 491, returning to Causeway Street at the west end of Building 491. It proceeds along Causeway Street to the point of origin. In addition, the boundary includes a discontinuous element that includes Buildings 505, 505A, 505B. This discontinuous element is at the terminus of I Street and is bounded by the a circular drive that surrounds Buildings 505, 505A, and 505B.

BOUNDARY JUSTIFICATION

The boundaries for this historic district were drawn to include all or nearly all buildings, structures, and sites that could contribute to the significance of this historic district, while retaining a ratio of contributing to total properties that far exceeds 50 percent. The historic district has a period of significance that extends from 1854-1945 and is significant in the areas of military history, industrial history, architecture and engineering, and historic archeology. The intent in defining this historic district boundary was to include all or nearly all properties that conform with that period of significance and those areas of significance.

Clearly, the simplest way of achieving that goal is to include the entire island. In doing so, however, non-contributing elements outnumber contributing elements. An alternative manner would be to define sub-districts, as was done with the 1976 NHL nomination and the 1986 study by Kenneth Cardwell. This approach, however,

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excludes large percentages of potentially contributing buildings, structures, and sites, particularly World War II-era buildings and archeological sites. The selected alternative was to define an arbitrary boundary within the island that included the vast majority of potential contributing elements while excluding areas dominated by post-1945 construction.

The boundary includes the bulk of Mare Island Naval Shipyard but does exclude three areas: the far northern end of the island; the west-central part of the island; and the golf course.

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1. Building 46, Smithery. Mare Island Historic District
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing southwest
7. 1

1. Building 69, Storehouse. Mare Island Historic District
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing northwest
7. 2

1. Building 89/91, Storage. Mare Island Historic District
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing northwest
7. 3

1. Building 88, Stables. Mare Island Historic District
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing southwest
7. 4

1. Building 87, Machine Shop. Mare Island Historic District
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing north
7. 5

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1. Cemetery. Mare Island Historic District
2. Solano County, California
3. Skip Mezger, CoDesign
4. April 25, 1995
5. JRP Historical Consulting Services
6. Camera facing southeast
7. 6

1. Building A1. Magazine. Mare Island Historic District
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing west
7. 7

1. Building A45. Gunner's House. Mare Island Historic District
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing northwest
7. 8

1. Building 52. Iron Plates Building. Mare Island Historic District.
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing west
7. 9

1. Building A11. Gun Cotton Magazine. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing southwest
7. 10

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1. Building A20. Magazine #2. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing west
7. 11

1. Building P, Boatswain's House. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing west
7. 12

1. Building 47. Headquarters. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing north
7. 13

1. Alden Park, including Bandstand, Building 56, seen from Farragut Plaza. Mare Island Historic District
2. Solano County, California
3. Skip Mezger, CoDesign
4. April 25, 1995
5. JRP Historical Consulting Services
6. Camera facing south
7. 14

1. Farragut Plaza, including mature Bunya Bunya tree. Mare Island Historic District
2. Solano County, California
3. Skip Mezger, CoDesign
4. April 25, 1995
5. JRP Historical Consulting Services
6. Camera facing west
7. 15

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1. Building M1. Marine Corps Commander's Residence. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing west
7. 16

1. Building M5. Marine Corps Officer's Residence. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing southwest
7. 17

1. Ordnance Reservoir, Mare Island Historic District
2. Solano County, California
3. PAR Environmental Services
4. February 21, 1995
5. PAR Environmental Services
6. Camera facing northeast
7. 18

1. Clubhouse Drive Park. Mare Island Historic District
2. Solano County, California
3. Skip Mezger, CoDesign
4. April 25, 1995
5. JRP Historical Consulting Services
6. Camera facing north
7. 19

1. Building 65. Office-Warehouse. Mare Island Historic District.
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing east
7. 20

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Section number Photographs Page 5

1. Building 271. Mechanic's Shop. Mare Island Historic District.
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing west
7. 21

1. Building A83. Underground Ammunition Magazine. Mare Island Historic District.
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing west
7. 22

1. Building 104. St. Peter's Chapel. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing west
7. 23

1. Chapel Park. Mare Island Historic District
2. Solano County, California
3. Skip Mezger, CoDesign
4. April 25, 1995
5. JRP Historical Consulting Services
6. Camera facing northwest
7. 24

1. Building A. Commandant's House. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing west
7. 25

National Register of Historic Places Continuation Sheet

Section number Photographs Page 6

1. Building B. Officers' Residence. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing west
7. 26

1. Building H1. Hospital. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing southwest
7. 27

1. Building 84. Naval Prison. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing west
7. 28

1. Building M37. Marine Corps Barracks. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing northeast
7. 29

1. Building 386, 388, 390. Forge Shop, Structural Shop, Shipfitting Shop. Mare Island Historic District.
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing southwest
7. 30

National Register of Historic Places Continuation Sheet

Section number Photographs Page 7

1. Building A151. Reinforced concrete magazine. Mare Island Historic District.
 2. Solano County, California
 3. Wes Gibson, MINSY Photographer
 4. May 18, 1995
 5. Mare Island Naval Shipyard
 6. Camera facing southeast
 7. 31
-
1. Building H72. Medical Ward Building, addition to H1. Mare Island Historic District.
 2. Solano County, California
 3. Stephen Mikesell, JRP Historical Consulting Services
 4. April 22, 1995
 5. JRP Historical Consulting Services
 6. Camera facing southwest
 7. 32
-
1. Building 459. Submarine Repair Base Barracks. Mare Island Historic District.
 2. Solano County, California
 3. Stephen Mikesell, JRP Historical Consulting Services
 4. April 22, 1995
 5. JRP Historical Consulting Services
 6. Camera facing northeast
 7. 33
-
1. Building 680. Machine Shop. Mare Island Historic District.
 2. Solano County, California
 3. Wes Gibson, MINSY Photographer
 4. May 18, 1995
 5. Mare Island Naval Shipyard
 6. Camera facing south
 7. 34
-
1. Building 742. Ordnance Machine Shop. Mare Island Historic District.
 2. Solano County, California
 3. Wes Gibson, MINSY Photographer
 4. May 18, 1995
 5. Mare Island Naval Shipyard
 6. Camera facing northwest
 7. 35

National Register of Historic Places Continuation Sheet

Section number Photographs Page 8

1. Building 733. WAVES Barracks. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing northwest
7. 36

1. Building A266. Machine Shop, Ammunition Depot. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing north
7. 37

1. Building Q2. Officers' Quarters (Duplex). Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing north
7. 38

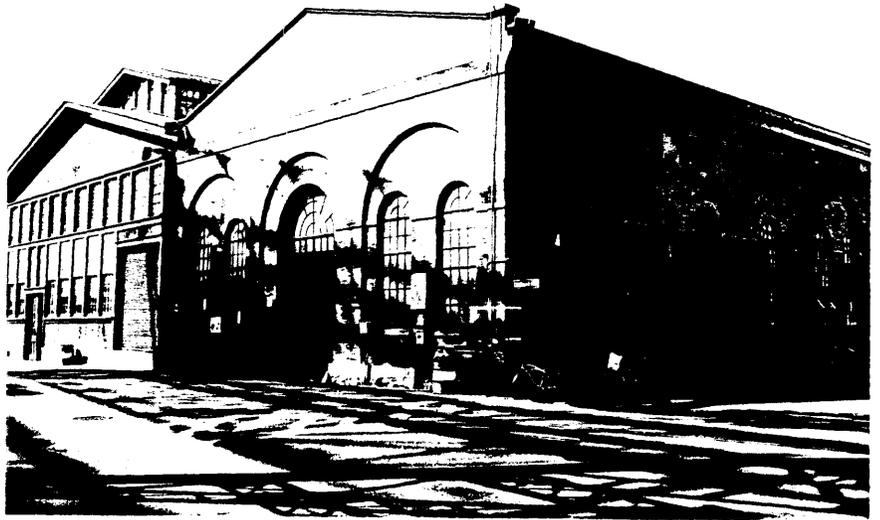
1. Building 521. Headquarters Annex. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing north
7. 39

1. Building 527. Warehouse. Mare Island Historic District.
2. Solano County, California
3. Stephen Mikesell, JRP Historical Consulting Services
4. April 22, 1995
5. JRP Historical Consulting Services
6. Camera facing southwest
7. 40

National Register of Historic Places Continuation Sheet

Section number Photographs Page 9

1. Building A208. Underground Magazine. Mare Island Historic District.
2. Solano County, California
3. Wes Gibson, MINSY Photographer
4. May 18, 1995
5. Mare Island Naval Shipyard
6. Camera facing north
7. 41



Photograph 1. Building 46.
Smithery,
camera facing southwest.



Photograph 2. Building 69.
Storeroom,
camera facing northwest.



Photograph 3. Building 89/91.
Storage,
camera facing northwest.



Photograph 4. Building 88.
Stables.
camera facing southwest.



Photograph 5. Building 87.
Machine Shop,
camera facing north.



Photograph 6. Cemetery.
camera facing
southeast.



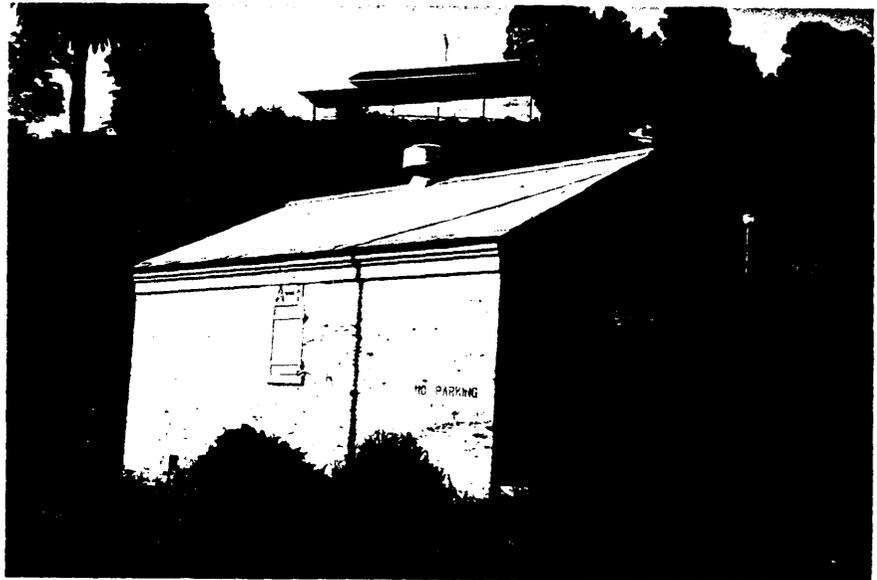
Photograph 7. Building A1.
Magazine,
camera facing west.



Photograph 8. Building A45.
Gunner's House,
camera facing northwest.



Photograph 9. Building 52.
Iron Plating Facility.
camera facing west.



Photograph 10. Building A11.
Gun Cotton Magazine.
camera facing southwest.



Photograph 11. Building A20.
Magazine #2,
camera facing west.



Photograph 12. Building P.
Boatswain's House,
camera facing west.



Photograph 13. Building 47.
Headquarters,
camera facing north.



Photograph 14. Alden Park, including
Bandstand, Building 56,
camera facing south.

Photograph 15.

Farragut Plaza,
including mature
Bunya Bunya tree,
camera facing west.



Photograph 16.

Building M1.
Marine Corps
Commander's Residence,
camera facing west.

Photograph 17. Building M5.
Marine Corps
Officers' Residence
camera facing
southwest.

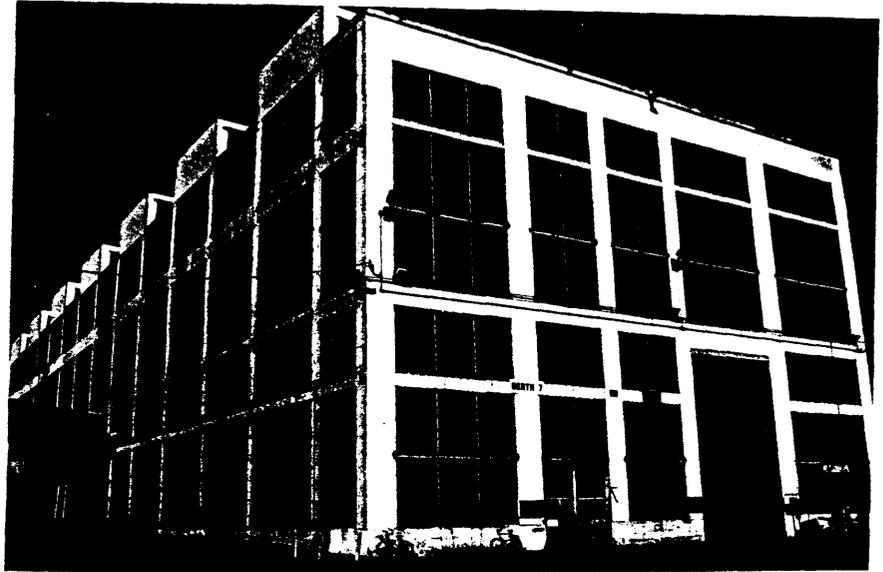


Photograph 18. Ordnance Reservoir,
camera facing northeast.

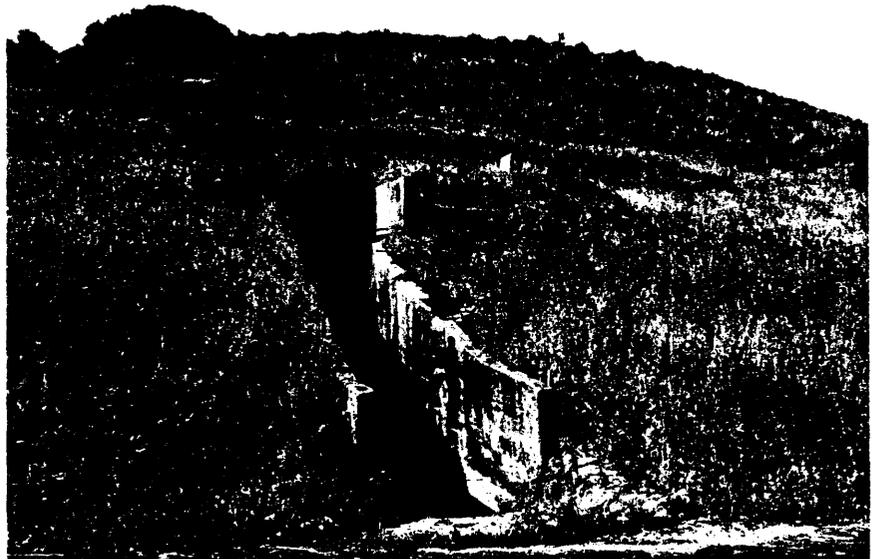
Photograph 19. Clubhouse Drive
Park, camera facing
north.



Photograph 20. Building 65.
Office-Warehouse,
camera facing east.

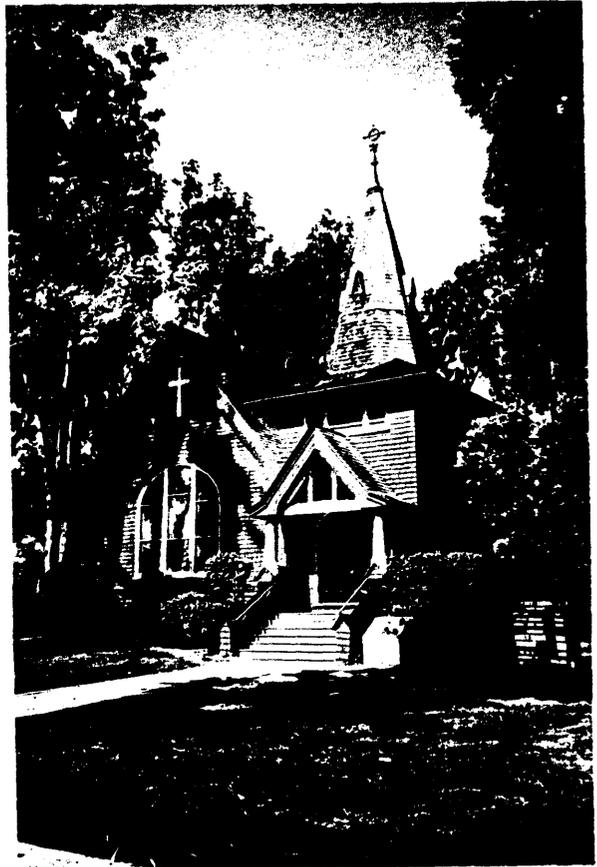


Photograph 21. Building 271.
Mechanic's Shop,
camera facing west.



Photograph 22. Building A83.
Underground
Ammunition Magazine,
camera facing west.

Photograph 23. Building 104.
St. Peter's Chapel,
camera facing west.



Photograph 24. Chapel Park,
camera facing northwest.



Photograph 27. Building H1.
Hospital,
camera facing southwest.



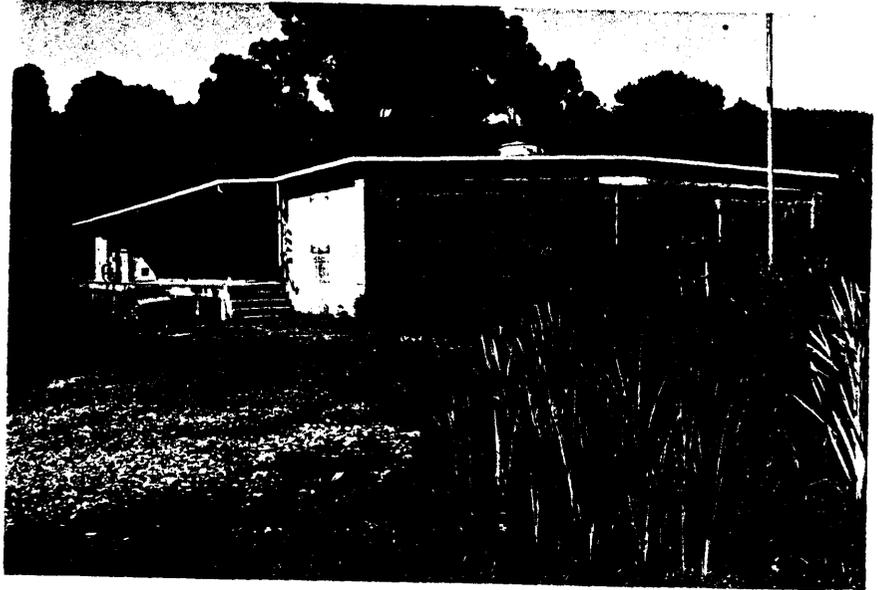
Photograph 28. Building 84.
Naval Prison,
camera facing west.



Photograph 29. Building M37.
Marine Corps Barracks,
camera facing northeast.



Photograph 30. Building 386, 388, 390.
Forge Shop, Structural
Shop, Shipfitting Shop,
camera facing southwest.



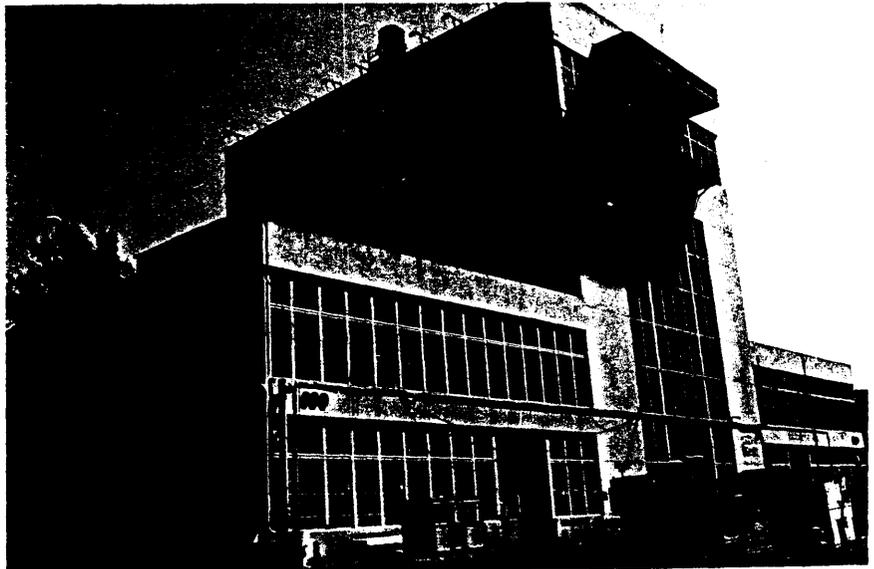
Photograph 31. Building A151. Reinforced Concrete Magazine, camera facing southeast.



Photograph 32. Building H72. Medical Ward Building, camera facing southwest.



Photograph 33. Building 459.
Submarine Repair Base
Barracks, camera facing
northeast.



Photograph 34. Building 680.
Machine Shop,
camera facing south.



Photograph 35. Building 742.
Ordnance Machine Shop,
camera facing northwest.



Photograph 36. Building 733.
WAVES Barracks,
camera facing northwest.



Photograph 37. Building A266.
Machine Shop,
Ammunition Depot,
camera facing north.



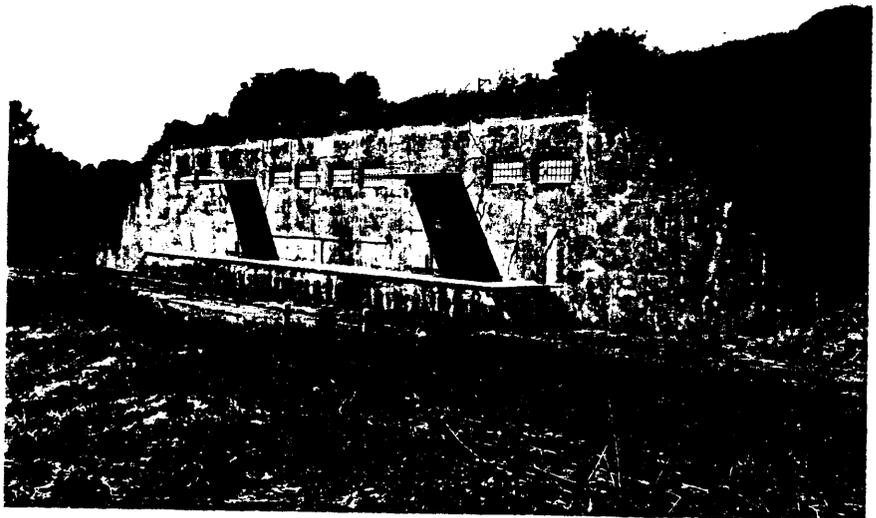
Photograph 38. Building Q2.
Officers' Quarters,
camera facing north.



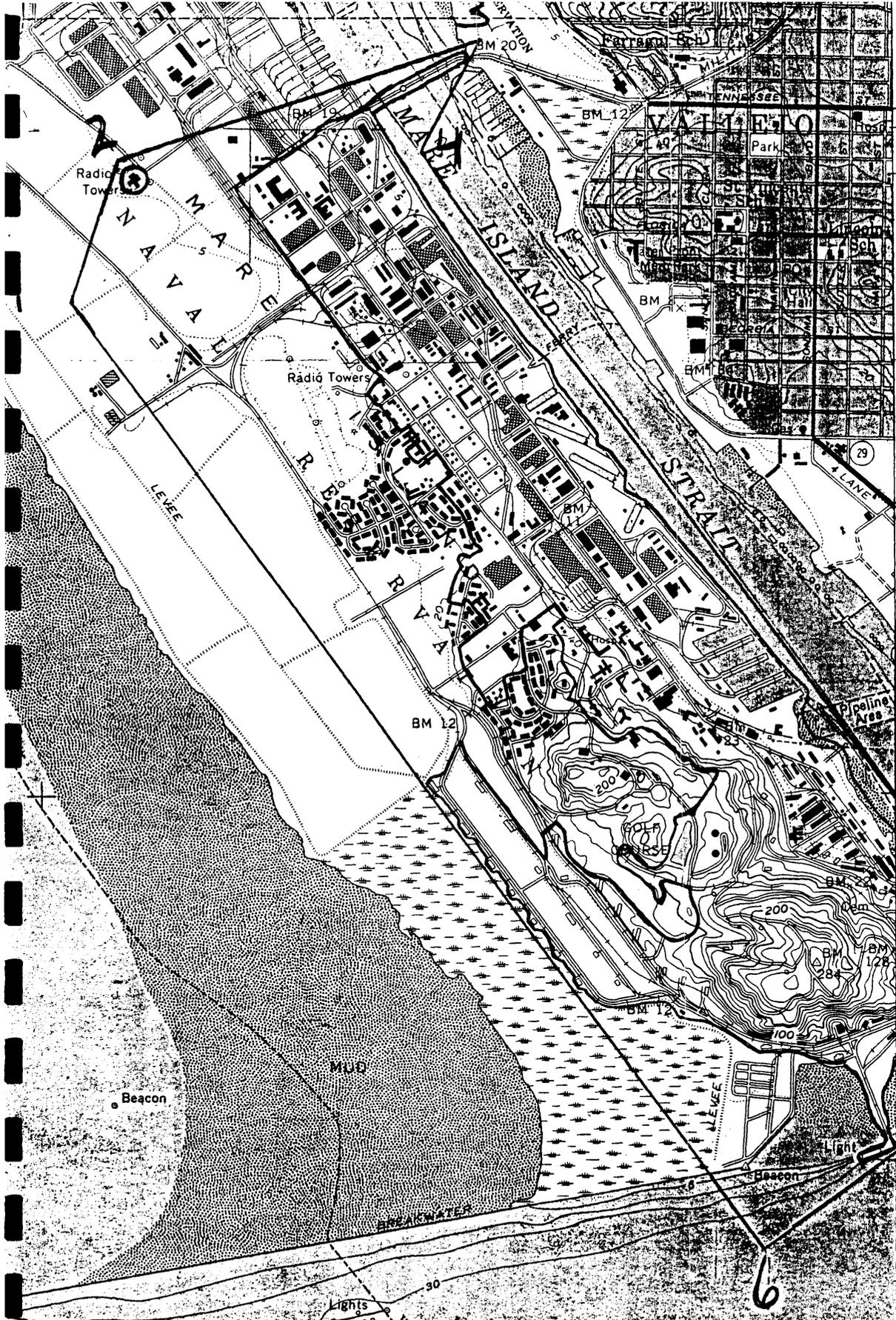
Photograph 39. Building 521.
Headquarters Annex,
camera facing north.



Photograph 40. Building 527.
Warehouse, camera
facing southwest.



Photograph 41. Building A208.
Underground Magazine,
camera facing north.



MARE ISLAND
 HISTORIC DISTRICT
 VALLEJO, SOLANO
 COUNTY, CA

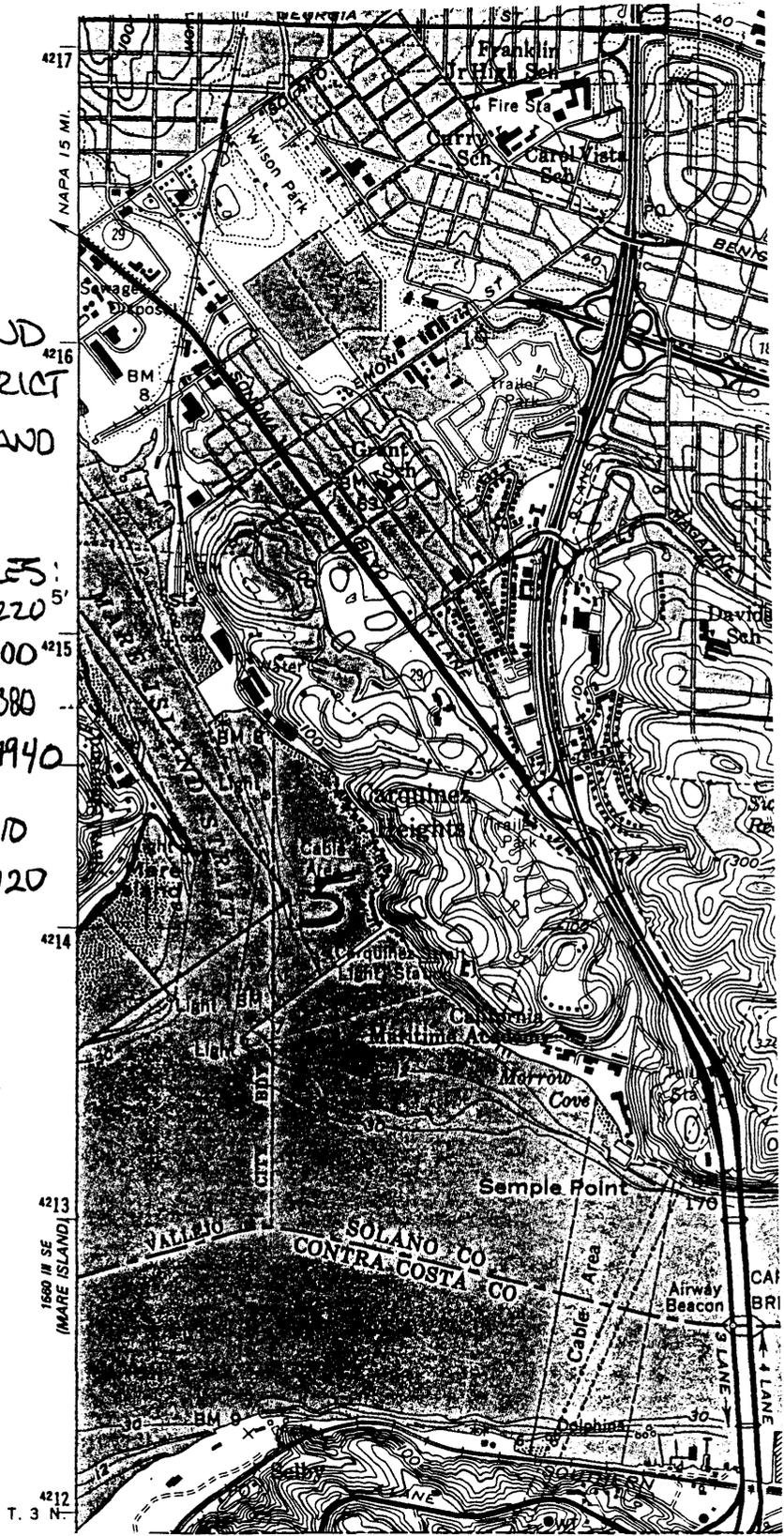
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 2. 10/562520/421790C
 3. 10/564000/421838C
 4. 10/563760/421794L
 5. 10/564800/421411D
 6. 10/565200/421312D

Figure 1. Quadrangle: Mare Island, California
 Scale: 1:24,000
 UTM References:

- | | |
|----------------------|----------------------|
| 1. 10/562220/4217220 | 4. 10/563760/4217940 |
| 2. 10/562520/4217900 | 6. 10/565200/4213120 |
| 3. 10/564000/4218380 | |

MARE ISLAND
HISTORIC DISTRICT
VALLEJO, SOLANO
COUNTY, CA

- UTM REFERENCES:
1. 10/562220/4217220^{5'}
 2. 10/562520/4217900⁴²¹⁵
 3. 10/564000/4218380
 4. 10/563760/4217940
 5. 10/566480/4214110
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Quadrangle: Benicia, California
Scale: 1:24,000
UTM References:
5. 10/566480/42144110

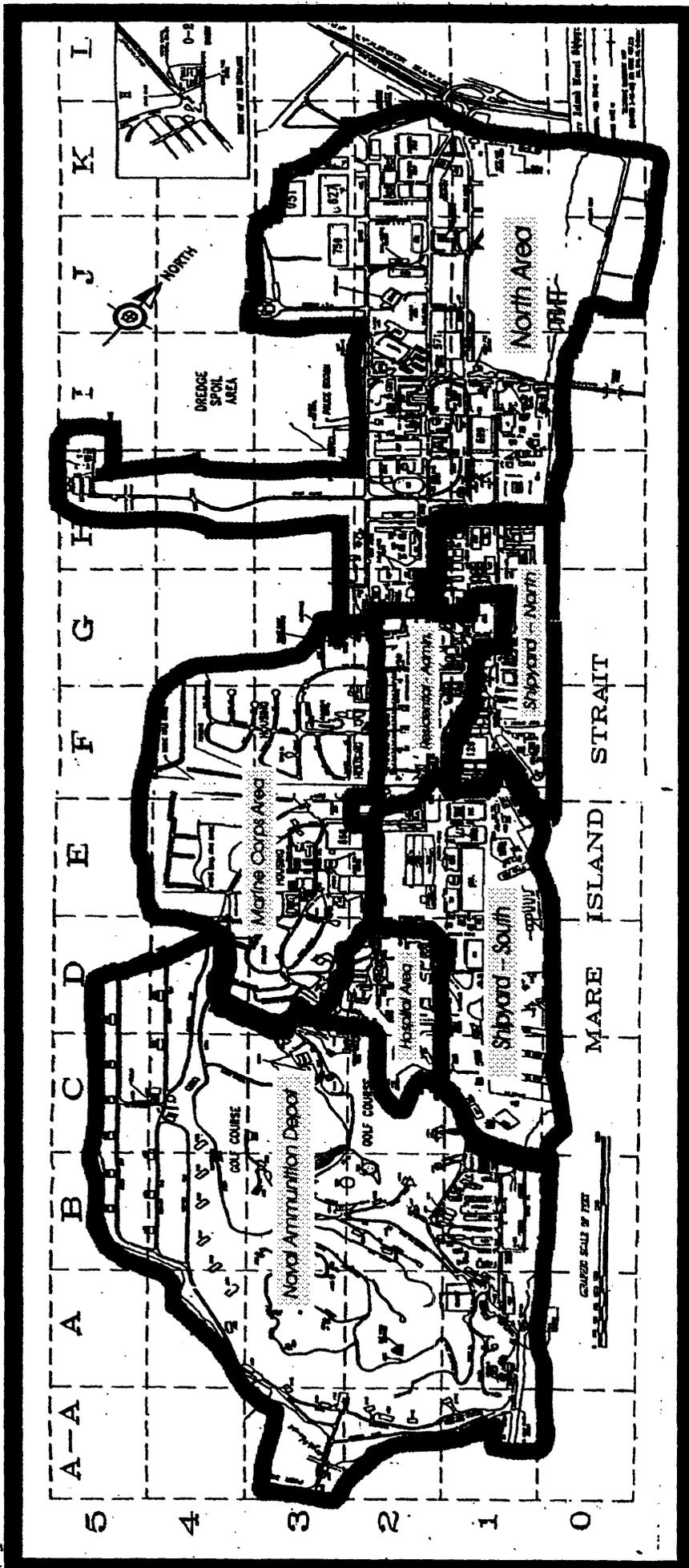
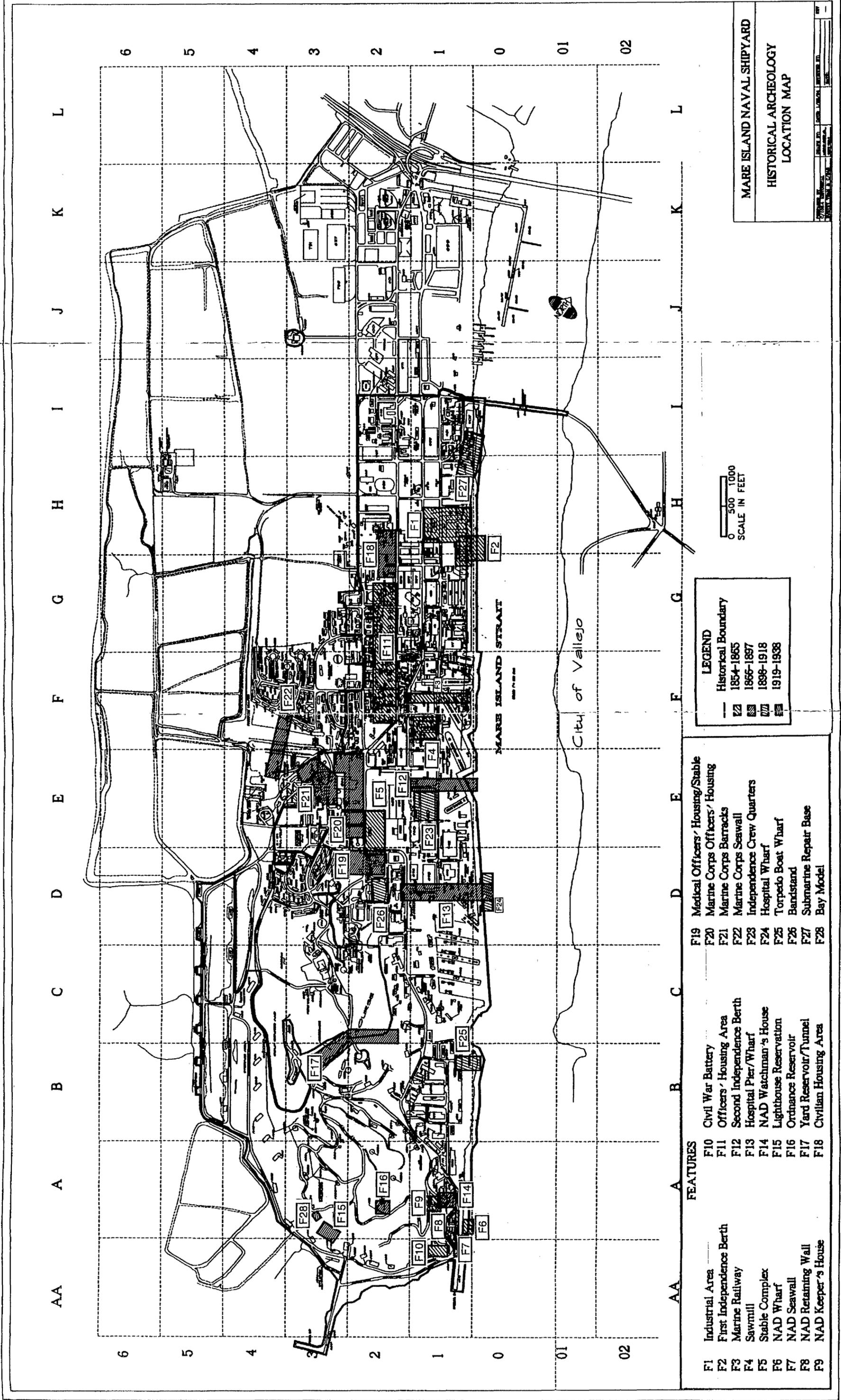


Figure 2. Areas of Mare Island



FEATURES	
F1	Industrial Area
F2	First Independence Berth
F3	Marine Railway
F4	Sawmill
F5	Stable Complex
F6	NAD Wharf
F7	NAD Seawall
F8	NAD Retaining Wall
F9	NAD Keeper's House
F10	Civil War Battery
F11	Officers' Housing Area
F12	Second Independence Berth
F13	Hospital Pier/Wharf
F14	NAD Watchman's House
F15	Lighthouse Reservation
F16	Ordnance Reservoir
F17	Yard Reservoir/Tunnel
F18	Civilian Housing Area
F19	Medical Officers' Housing/Stable
F20	Marine Corps Officers' Housing
F21	Marine Corps Barracks
F22	Marine Corps Seawall
F23	Independence Crew Quarters
F24	Hospital Wharf
F25	Torpedo Boat Wharf
F26	Bandstand
F27	Submarine Repair Base
F28	Bay Model

LEGEND	
—	Historical Boundary
[Pattern]	1854-1865
[Pattern]	1866-1897
[Pattern]	1898-1918
[Pattern]	1919-1938

MARE ISLAND NAVAL SHIPYARD

HISTORICAL ARCHEOLOGY
LOCATION MAP

DATE: 11/15/88
SCALE: 1" = 1000'
DRAWN BY: J. L. ...
CHECKED BY: ...

Figure 4. Potential Historical Archeological Features

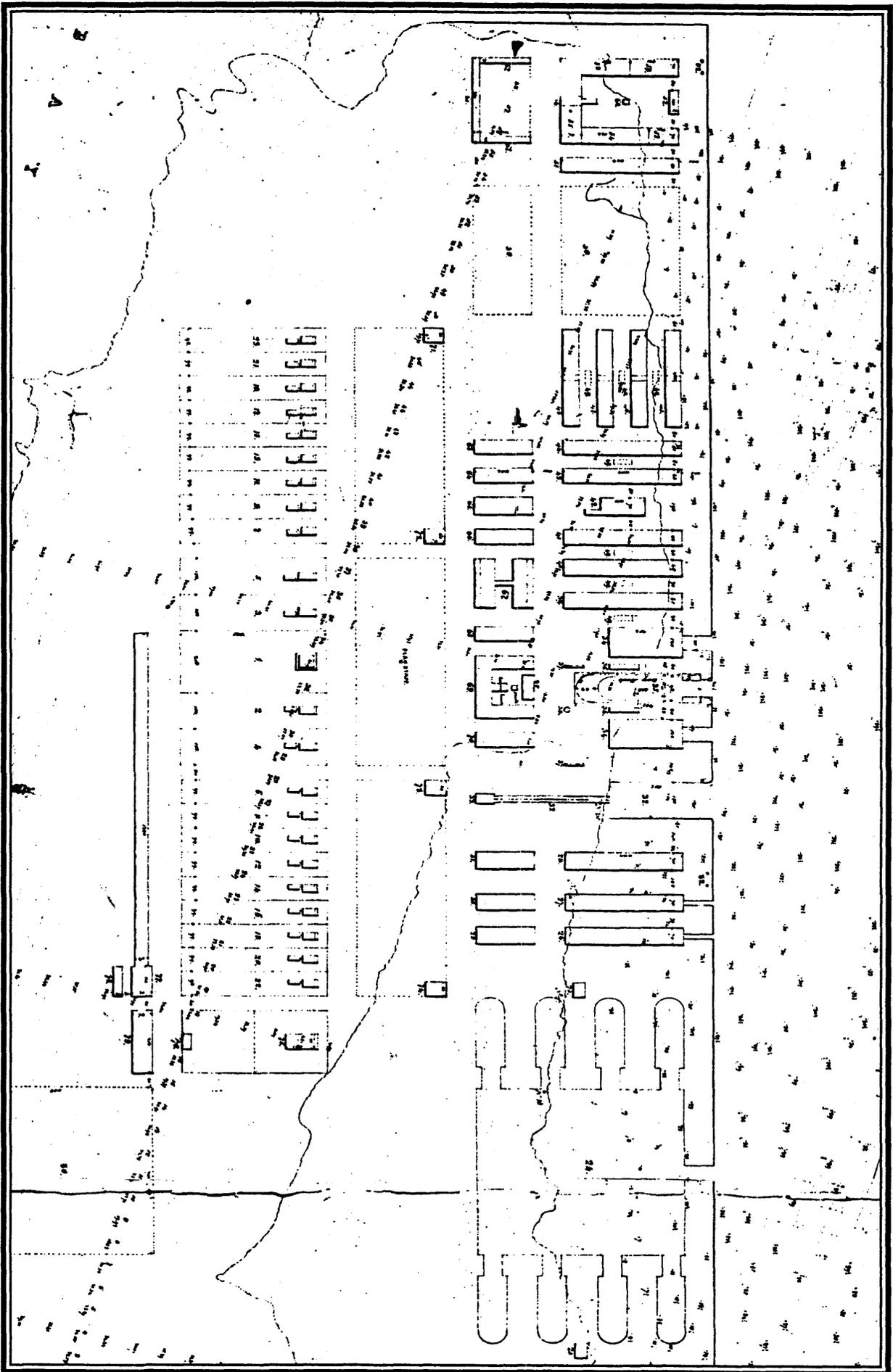


Figure 6. Detail of the Sanger Plan, ca. 1854